A

TREATISE

ON THE

SCURVY.

IN THREE PARTS.

CONTAINING

An Inquiry into the Nature, Cauſes, and Cure, of that Diſeaſe.

Together with

A Critical and Chronological View of what has been publiſhed on the Subject.

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TO

The RIGHT HONOURABLE,

GEORGE Lord ANSON,

&c. &c. &c.

Who, as a juſt reward for the great and ſignal ſervices done to the BRITISH NATION, does now preſide over her NAVAL AFFAIRS.

Who conſults with unwearied and ſucceſsful attention the improvement of the SERVICE in all its branches, and has condeſcended to honour with his approbation theſe labours deſigned for the uſe of the navy.

The following TREATISE

IS INSCRIBED,

With the greateſt reſpect,

By his LORDSHIP's

Moſt devoted,

Moſt obliged,

and obedient ſervant,

JAMES LIND.

PREFACE

To the FIRST EDITION.

THE *ſubject of the following ſheets is of great importance to this nation; the moſt powerful in her fleets, and the moſt flouriſhing in her commerce, of any in the world. Armies have been ſuppoſed to loſe more of their men by ſickneſs, than by the ſword. But this obſervation has been much more verified in our fleets and ſquadrons; where the ſcurvy alone, during the laſt war, proved a more deſtructive enemy, and cut off more valuable lives, than the united efforts of the* French *and* Spaniſh *arms. It has not only occaſionally committed ſurpriſing ravages in ſhips, and proved the total deſtruction of the moſt powerful fleets (of which that of Admiral* Hoſier's, *when at the* Baſtimentos, *is a memorable and dreadful inſtance) but almoſt always affects the conſtitution of ſailors; and where it does not riſe to ſo viſible a calamity, yet it often makes a powerful addition to the malignity of other diſeaſes. It is now above* 150 *years ſince that great ſea-officer, Sir* John Hawkins, *in his*

obſervations made in a voyage to the South ſea, remarked it to be the peſtilence of that element. He was able, in the courſe of twenty years, in which he had been employed at ſea, to give an account of 10,000 *mariners deſtroyed by it. But I flatter myſelf, that it will appear from the following treatiſe, that the calamity may be prevented, and the danger of this deſtructive evil obviated: nor is there any queſtion, but every attempt to put a ſtop to ſo conſuming a plague, will meet with a favourable reception from the public.*

It is a ſubject in which all practitioners of phyſic are highly intereſted. For it will be found, that the miſchief is not confined to the ſea, but is extended particularly to armies at land; and is an endemic evil in many parts of the world. This diſeaſe, for above a century, has been the ſuppoſed ſcourge of Europe. *But how much even the learned world ſtands in need of farther light in ſo dark a region of phyſic, may appear from the late mournful ſtory of the* German *troops in* Hungary, *the diſaſter in* Thorn, *and from many other relations in this treatiſe.*

What gave occaſion to my attempting this work, is briefly as follows.

After

After the publication of the Right Honourable Lord Anſon's *voyage, by the Reverend Mr.* Walter, *the lively and elegant picture there exhibited of the diſtreſs occaſioned by this diſeaſe, which afflicted the crews of that noble, brave, and experienced Commander, in his paſſage round the world, excited the curioſity of many to inquire into the nature of a malady accompanied with ſuch extraordinary appearances. It was acknowledged, that the beſt deſcriptions of it are met with in the accounts of voyages: but it was regretted, that thoſe were the productions only of ſeamen; and that no phyſician converſant with this diſeaſe at ſea, had undertaken to throw light upon the ſubject, and clear it from the obſcurity under which it had lain in the works of phyſicians who practiſed only at land. Some time afterwards, the ſociety of ſurgeons of the Royal navy publiſhed their laudable plan for improving medical knowledge, by the labours of its ſeveral members; who have opportunities of inſpecting Nature, and examining diſeaſes, under the varied influence of different climates, ſeaſons, and ſoils. I then wrote a paper on the ſcurvy, with a deſign of having it publiſhed by* them. *It appeared to me a ſubject worthy of the ſtricteſt*

inquiry: and I was led upon this occaſion to conſult ſeveral authors who had treated of the diſeaſe; where I perceived miſtakes which have been attended, in practice, with dangerous and fatal conſequences. There appeared to me an evident neceſſity of rectifying thoſe errors, on account of the pernicious effects they have already viſibly produced. But as it is no eaſy matter to root out old prejudices, or to overturn opinions which have acquired an eſtabliſhment by time, cuſtom, and great authorities; it became therefore requiſite for this purpoſe, to exhibit a full and impartial view of what had hitherto been publiſhed on the ſcurvy; and that in a chronological order, by which the ſources of thoſe miſtakes might be detected. Indeed, before this ſubject could be ſet in a clear and proper light, it was neceſſary to remove a great deal of rubbiſh. Thus, what was firſt intended as a ſhort paper to be publiſhed in the memoirs of our medical naval-ſociety, has now ſwelled to a volume, not altogether ſuitable to the plan and inſtitution of that laudable and learned body.

I cannot, however, upon this occaſion, omit acknowledging with gratitude the many excellent practical obſervations I have been favour-

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ed with by ſome of its moſt worthy members; eſpecially by the ingenious Mr. Ives *of* Goſport; *and Mr.* John Murray, *an eminent ſurgeon at* Wells, *in* Norfolk. *Notwithſtanding which advantage, I am ſenſible of many inaccuracies and imperfections in this performance. They are perhaps the more numerous, as it has been ſent to the preſs ſooner than was at firſt intended. There are, however, two things that may appear exceptionable, which I ought here particularly to mention.*

The firſt is the plan of the work.

I am ſorry to find myſelf under a neceſſity of offering what ſome of my readers may think very indifferent entertainment, and that at their ſetting out, in the critical chapters of the firſt part. But it was not eaſy to fall upon a method equally adapted to all readers: nor indeed is the arrangement of the ſeveral chapters a matter of any great importance. The order here followed, is that in which it ought to be peruſed by phyſicians and men of learning, who have made this diſeaſe their ſtudy, and are previouſly acquainted with former writings upon it. It was neceſſary, in order to prevail with ſome of theſe gentlemen to peruſe the ſecond part with leſs prejudice againſt me, to endea-

vour

your firſt to remove ſuch objections as might ariſe from doctrines imbibed in younger years, in ſchools and univerſities. Others, who are not ſo well acquainted with the ſubject, I would adviſe to begin with the ſecond part; which will enable them to form a better judgment of the firſt. The Bibliotheca ſcorbutica, *or the collection of authors on the ſcurvy, is placed at the latter end of the book, as proper to be conſulted in the dictionary-way. And* it is to be remarked, that when, to avoid repetitions in the firſt and ſecond parts, an author's name is barely mentioned, recourſe muſt be had to the Alphabetical Index; which points out the page where the title of the book referred to, or its abridgment in part 3. is to be found.

In the order of the chapters, the prevention of the diſeaſe precedes its cure: and the firſt being the moſt material, I have thrown great part of the latter into it; this method of treating the ſcurvy ſuiting it better perhaps than any other. It will appear, that in the plan I have purſued, I had in view an author whoſe book has met with a general good reception, Auſtruc de morbis venereis; *and were other diſeaſes treated in like manner, it would greatly abridge*

abridge the enormous, and ſtill increaſing number of books in our ſcience.

What may be deemed by critics equally exceptionable with the order of the chapters, are ſome few repetitions. But in certain caſes they were neceſſary, in order to obviate prejudices at the time they might naturally ariſe, and enforce the argument.

As to the contents of the book in general:

In the firſt part, I have endeavoured, by a connected courſe of reaſoning in the ſeveral chapters, to eſtabliſh what is there advanced, upon the cleareſt evidence, confirmed by ſome of the beſt authorities; and have laid aſide all ſyſtems and theories of this malady which were found to be diſavowed by nature and facts. Where I have been neceſſarily led, in this diſagreeable part of the work, to criticiſe the ſentiments of eminent and learned authors, I have not done it with a malignant view of depreciating their labours, or their names; but from a regard to truth, and to the good of mankind. I hope ſuch motives will, to the candid, and to the moſt judicious, be a ſufficient apology for the liberties I have aſſumed.

Dies diem docet.

The

The principal chapters of the ſecond part, containing a deſcription of this diſeaſe, its cauſes, the means of preventing and curing it, are alſo founded upon atteſted facts and obſervations, without ſuffering the illuſions of theory to influence and pervert the judgment. For, that things certain may precede what is uncertain, the theory, and the inferences from it, are placed at the latter end.

In the third part, where I have given an abridgment of what has been written upon the ſubject by the moſt celebrated medical authors, and others, I have always endeavoured to expreſs their ſentiments with as much clearneſs and conciſeneſs as I could. I have indeed thro' the whole aimed at perſpicuity rather than elegance of diction, as moſt proper in a book of ſcience. To know a diſeaſe, and to cure it, being the two things moſt eſſential to be learned; I have therefore tranſcribed the ſymptoms and cure of the ſcurvy from thoſe authors, where they do not entirely copy from each other.

ADVER-

ADVERTISEMENT

To the SECOND EDITION.

AS the publication of this ſecond edition has been delayed for a conſiderable time, and it now appears with additions and alterations, it is judged proper to give the reaſons for both.

As ſoon as the book was publiſhed, copies were ſent to the moſt eminent phyſicians of different countries in *Europe*; and to others, whoſe experience might furniſh uſeful obſervations, and contribute to aſcertain the cure and prevention of the ſcurvy both at ſea and land. In moſt parts of *Europe* where a maritime force is kept, proper means were alſo uſed to obtain information of the methods practiſed in the *navies* of different nations to prevent this diſeaſe ſo fatal to ſeamen, and likewiſe the ordinary and approved methods of cure by practitioners in thoſe countries.—Several accounts have come to hand; but as ſome gentlemen have not yet favoured me with an anſwer, I am obliged now to take this public method of addreſſing them, praying they would inform me by letter, whether they have received the book and my queries; particularly Dr. *Swencke*, who has the ſuperintendence of the medical departement in the *Dutch* navy and army:—Dr. *Van Berger*, phy-

phyſician to his *Daniſh* Majeſty:—and Dr. *Grieve*, who directs in the medical chancery at *Moſcow*.

I would not indeed have poſtponed the publication ſo long, upon account of the delay of theſe anſwers, had not the following reaſon alſo offered. Soon after this treatiſe appeared, in the ſpring 1754, an epidemical ſcurvy broke out at *Paris*, and thoſe who were afflicted with it, were by order of the *French* King put into *L'Hôpital de la Peſte*, under the inſpection of Dr. *Miſſa*. This gentleman was very exact in taking notes every day of a variety of caſes which then occurred in a very uncommon number of ſcorbutic patients, and opened forty of their dead bodies. His obſervations have been ready for the preſs this twelve-month paſt, waiting only the tranſlation of this book. But as Dr. *Mere* at *Montpelier* (whom I thank for having done me the honour of a very elegant tranſlation into *French*) propoſed to publiſh it in *October* laſt, and I have received no accounts ſince from Dr. *Miſſa* of his performance, I could delay this new edition no longer; eſpecially as I have reaſon to believe the doctor has in ſome reſpects altered his ſentiments upon the ſcurvy, maintained in a *Theſis* before the faculty of phyſic at *Paris* on the 1ſt day of *February* 1754, after having had ſoon after ſo ample a field for obſervation in that diſeaſe.

This

This delay has afforded me ſufficient leiſure to reviſe the former edition with care, and an opportunity of inſerting many other relations in Part 3. which I had omitted; particularly the curious and accurate account of the ſcurvy in *Breda* by *Mye*, *&c.* I have added a ſupplement to Part 2. in which I propoſed to have placed apart, the accounts of this diſeaſe communicated from different countries; on purpoſe to exhibit a view of the preſent ſtate of the ſcurvy in *Europe*, and the various opinions of the learned concerning it.—It would have been ſtill fuller, had not the late excellent remarks made on this malady in *Holland*, by the celebrated *Van Swieten*; as alſo many obſervations communicated by the learned Dr. *Huxham* and others, fallen more naturally in with other parts of the book. That this work may prove ſtill more beneficial to the *royal navy*, I have added a new method of preventing the calamity at ſea by a commutation of the ſhip's proviſions with the purſer; which I hope, and am perſwaded, if put in practice, will prove effectual.

Being unwilling to ſwell the book to a larger ſize, I have here greatly abridged the critical reaſoning in Part 1. in order to make way for thoſe more neceſſary entertaining and practical obſervations, which have come to hand ſince the publication of the former edition. In a work of this ſort, though treating

expreſsly

expreſsly of one ſubject, a number of other particulars are neceſſarily comprehended. The obſervations made on this diſtemper, ſeem greatly to affect the modern theory and practice in ſome other diſorders; but I have every where left the corrolaries foreign to the ſubject to be drawn by the reader. It is proper further to take notice, that a few miſtakes were found to have been made in the tranſlation of ſome *German* authors in Part 3, particularly in Dr. *Nitzſch*'s treatiſe, which are here rectified.

I hope the pains taken to improve this treatiſe, will in ſome meaſure be deemed a ſmall acknowledgement to the public for the favourable reception given it.—Or at leaſt will ſhew my inclination to relieve the diſtreſſed, more eſpecially the ſeamen in the royal navy.

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A TREATISE OF THE SCURVY.

PART I. *Preliminary Diſcourſes.*

CHAP. I.

A critical hiſtory of the different accounts of this diſeaſe.

IN the firſt accounts given us of this diſeaſe, by *Ronſſeus*, *Echtbius*, and *Wierus (a)*, it is ſurpriſing to find, not only an accurate deſcription of it, but an enumeration of almoſt all the truly antiſcorbutic medicines that are known to the world even at this day.

Ronſſeus, who believed it to be the ſame diſeaſe that is deſcribed by *Pliny (b)*, and is ſaid to have afflicted the *Roman* army under the command of *Cæſar Germanicus*, obſerved, that in his time it was to be met with only in *Holland*, *Frieſland*, and *Denmark*; though he had heard of its

(a) The firſt authors on the ſcurvy. *Ronſſeus* and *Echtbius*, though contemporary, wrote ſeparately, without having the benefit of ſeeing each others works.

(b) Vid. part 3, chap. 1.

appearing in *Flanders*, *Brabant*, and ſome parts of *Germany*. From ſeeing ſome of thoſe countries entirely free from this diſtemper, he was induced to aſcribe its frequency in other places to their ſoil, climate, and diet. In order to prove which, he wrote his firſt epiſtle (*c*).

Echthius ſeems to be the firſt who gave riſe to the opinion of its being a contagious or infectious *lues*. He was led into that miſtake, by obſerving whole monaſteries who lived on the ſame diet, and in the ſame air, at once affected with it, eſpecially after fevers; which no doubt might become infectious in cloſe and confined apartments. He imagined, therefore, that a ſcurvy might in a manner be the *criſis* of a fever, and as ſuch deemed it contagious.

But although *Wierus* tranſcribes the ſymptoms from this laſt author, (which he does almoſt *verbatim*), upon this occaſion he very juſtly differs from him. He obſerves, that the ſcurvy is not properly the *criſis* of a fever; but, like many other diſeaſes, may be occaſioned after it by unſound *viſcera*, and a vitiated ſtate of blood. He imagines people were induced to believe it a contagious malady, by ſeeing many whole families alike affected; but this he aſcribed to the *ſameneſs* of their diet. He was however deceived (probably by the authority of *Echthius*) in thinking, that where the gums were putrid, the diſeaſe might be infectious: and accordingly makes it a doubt, whether in ſome parts of the *Lower Germany*, where it had lately appeared, it was owing to their diet, or to infection. But it ſhall

(*c*) Intitled, *Quare apud Amſterodamum, Alcmariam, atque alia vicina loca, frequentiſſimè infeſtet ſcorbutus?*

be

be fully proved hereafter, that the ſcurvy is not contagious or infectious *(d)*.

It may be proper to obſerve further, that *Wierus* had deſcribed the various and extraordinary ſymptoms of this malady, in ſo accurate a manner, that the ſucceeding authors for a long time did nothing more than copy him. It was a conſiderable time after, when *Solomon Albertus* wrote a large treatiſe on this ſubject, wherein he aſſumes great merit to himſelf in diſcovering a ſymptom not taken notice of by any author, and which he had once or twice obſerved in this diſeaſe, *viz.* a *rigor* or ſtiffneſs of the lower jaw. However, *Wierus* ſtill continued in the greateſt eſteem and reputation; and his book was deemed the ſtandard on this ſubject, even till the time of *Eugalenus*, who gives it that juſt character, and refers to it almoſt entirely for the cure. *Wierus* then muſt be allowed to have been a good judge of this diſtemper: and as he was a perſon of eminent learning, as well as probity (which his writings on this and many other ſubjects ſufficiently ſhew) his word may be relied upon, when he tells us, that in his time this diſeaſe was peculiar to the inhabitants of the countries upon the north ſeas: he had never met with it in *Spain*, *France*, nor in *Italy*; nor was it to be ſeen in the large tract of *Upper Germany*: and as to *Aſia* and *Africa*, if ever it appeared there, it would no doubt be in ſuch places as lay adjacent to the ſea; where ſuch a ſituation, and a groſs diet, with the uſe of putrid water, might give riſe to it, in the ſame manner as they do in the countries where it was endemic. Theſe were not conjectures in our author; for he was a

(d) Chap. 4.

great traveller, and had viſited all the places he talks of *(e)*. A book wrote in thoſe times by him, *De præſtigiis dæmonum*, adds much to his reputation; as it ſhews he was neither ſo weak, nor credulous, as ſome later writers on the ſcurvy.

Brunnerus, who may be deemed the next judicious author after him on this ſubject, obſerved, that in his time, when the uſe of wine was become more common, the ſcurvy was not ſo frequent as formerly, even in thoſe countries where it had been endemic.

Notwithſtanding which, in a very ſhort time after, we are ſurpriſed with accounts of this ſuppoſed contagious *lues* having ſpread far and wide. In leſs than thirty years after *Wierus*, *Solomon Albertus*, in his dedication to the Duke of *Brunſwick*, after ſome very pathetic declamations on the vices of the times, obſerves, that he had met with the ſcurvy every where; and that it prevailed in *Miſnia*, *Luſatia*, on the borders of *Bohemia* and *Sileſia*, *&c.*

However, the diſeaſe as yet ſtill retained the ſame face; its ſymptoms and appearances being the ſame. For though this author (who practiſed in a place where *Wierus* ſays the ſcurvy was uncommon) had diſcovered one extraordinary ſymptom, before mentioned, ſometimes accompanying it; and which certainly was but very rarely to be ſeen, as it eſcaped the obſervation of every one but himſelf: yet in other reſpects, he, as well as his contemporary writers, gives us the ſame account of it as *Wierus* had done; and particularly, that the putrid gums and ſwelled

(e) Vid. Melchior Adam in vita Wieri.

legs were the moſt certain and only characteriſtic ſigns of it *(f)*.

But eleven years after him, we are likewiſe acquainted by *Eugalenus*, with the ſurpriſing rapidity with which this contagious *lues* had made its progreſs over almoſt the whole world. And what is ſtill more remarkable, the face of the diſeaſe was in a few years ſo much changed, that the putrid gums and ſwelled legs were no longer characteriſtical ſigns of it, as it often killed the patient before theſe ſymptoms appeared *(g)*. And it is highly probable from the hiſtories of above 200 caſes of patients delivered in his book, wherein mention is made of the gums being affected in one perſon only, that ſuch ſymptoms did now but rarely, if at all, occur.

This malady was alſo greatly increaſed in virulence, as he gives us to underſtand in different parts of his performance: all which he would perſuade us to have proceeded from a very ſingular cauſe *(h)*.

But beſides the phyſical reaſon which he aſſigns, he is likewiſe pleaſed to introduce ſome moral

(f) Signa mali hujus characteriſtica non alia ſunt, præter duo illa (quorum ſuprà meminimus) gemina, ſymptomata pathognomica appellata, indubia morbi indicia, viz. ſtomacace et ſceletyrbe. Cætera ſymptomata ancipitia ſunt et vaga. Alberti hiſtoria ſcorbuti, p. 546.

(g) P. 10. and 211. The *Amſterdam* edition of *Eugalenus*, publiſhed in the year 1720, is here quoted.

(h) P. 250. where talking of the pox and ſcurvy as both modern diſeaſes, *Utrique etiam peculiare hoc noſtro ſeculo fuit, ut quàm longiſſimè latiſſimèque ſua pomœria dilatent et diffundant, atque procul à generationis ſuæ locis et terminis, ad incognita et remota loca excurrant evagenturque, atque ſub diametrali linea, quâ ſibi invicem, ſub polorum oppoſitione, oppoſita ſunt, ſe mutuò quaſi complectantur, et inter ſe virus ac venenum ſuum communicent. Ita fit ut hodie etiam Germaniæ, Angliæ, Galliæ, hic morbus innoteſcat; apud quos antea ne quidem auditum ejus nomen fuit.*

conſiderations, to account for the greater frequency and virulence of this diſtemper, and the extraordinary ſymptoms which he aſcribes to it. In one place *(i)* he attributes its irregular appearances to the operation of the devil. But in another, he thinks this new and ſurpriſing calamity ſent, by divine permiſſion, as a chaſtiſement for the ſins of the world. And as he really thought himſelf (as appears through the whole treatiſe) the moſt ſagacious detector of this *Proteus*-like miſchief, lurking under various and ſurpriſing appearances, he very religiouſly thanks Heaven for the important diſcovery *(k)*.

As *Eugalenus*'s book has been often reprinted in different parts of *Europe*, has been recommended by the greateſt authorities *Boerhaave*, *Hoffman* and others, and is looked upon at this day as the ſtandard author on our ſubject, in the former edition of this treatiſe I employed ſeveral pages (which I ſince have judged unneceſſary to reprint) in a critical inquiry into the propriety of its contents and the merit of its author. I obſerved at great length wherein he differs in his account of this diſeaſe from all preceding authors; for as to thoſe who ſucceeded him, they did little more for ſome time than copy him. But for this I muſt here refer to the abridgment of his work in part 3.

(i) P. 81.

(k) Quod ideò permittere Deus videtur, ut hoc modo iram ſuam adverſus peccata oſtendat, dum novis et inuſitatis morbis et ægritudinibus, nunquam prius cognitis ac viſis, mortale genus in ira ſua viſitat et caſtigat; ut etiam vulgus noſtras, morborum novitate admonitum, intelligat differentes hujus temporis febres ac morbos eſſe, ab iis qui ante aliquot annos homines afflixerunt. Agamus igitur Deo gratias, quòd pro ſua infinita miſericordia ac clementia tam benignè eos nobis revelare dignatus ſit, p. 222.

The

The different accounts and deſcriptions of the ſame diſeaſe by *Eugalenus* and the preceding authors, as they will there appear, can be accounted for but in two ways.

This diſtemper muſt, in a very ſhort time after the firſt accounts of it were publiſhed, have made an incredible progreſs, become an univerſal calamity, and aſſumed quite a new appearance and different ſymptoms. This was the opinion of *Eugalenus*; who, although he has given ſuch a new and different relation of it, yet tells us expreſsly, it was the *ſtomacacia* of *Pliny*, the diſeaſe deſcribed by all other authors under the name of *ſcurvy*; with whom he agrees in aſſigning the ſame cauſe and cure. For which laſt, in particular, he refers us to theſe authors.

Or we may ſuppoſe, that this author might be miſtaken, in thinking the diſeaſe he has deſcribed, to be preciſely the ſame with that which was formerly known by that appellation: yet perhaps there may be found ſome analogy or reſemblance betwixt what he deemed ſuch, and the former accounts we had of the ſcurvy; ſo that they may be ſaid to border on each other. Or at leaſt he has given this denomination to a complication of various ſymptoms firſt deſcribed by himſelf; and thus has characteriſed under the name of *ſcurvy*, a particular diſeaſe, or claſs of diſeaſes; in which he has been followed by ſucceeding authors.

Upon the firſt ſuppoſition, before we can give entire credit to him, and believe ſo great an alteration to have happened in this diſtemper, it is neceſſary we ſhould know what grounds he had for his opinion, and what reaſons induced him to believe, that ſo many diſeaſes, various and oppoſite in their appearances, were nothing more

than the ſcurvy lurking under different forms. It is at leaſt required, that there ſhould have been in the effects or appearances of the diſeaſes, ſome diſtant analogy or reſemblance left; otherwiſe there will be a ſtrong preſumption that here he might be miſtaken.

But inſtead of pointing out to us any ſuch ſimilarity or reſemblance betwixt the diſeaſes he has deſcribed, and the real ſcurvy as deſcribed by all others before him; he has fallen upon a moſt extraordinary method of proving their identity, by *aſſuming for pathognomonic and demonſtrative ſcorbutic ſigns, ſuch ſymptoms as had never been obſerved in the diſeaſe before*; *viz.* ſuch a ſtate of urine and pulſe as is entirely different from the deſcription given of them by the moſt accurate writers *(l)*.

Now, upon a ſuppoſition that the pulſe and urine, like the reſt of the ſymptoms, had alſo varied in this diſtemper from their former appearances, it was then incumbent upon him to

(l) Vid. part 3. chap. 2. *Forreſtus* tells us, that in this malady the ſtate of the urine deſerves no regard; and wrote three books to prove it fallacious. Although *Reuſnerus* does not in this agree with *Forreſtus*; yet he, as well as *Wierus*, differs widely from *Eugalenus* in the deſcription of the urines in this diſeaſe. As to the ſtate of pulſe deſcribed by *Eugalenus*, which he aſſerts to be the moſt conſtant concomitant of this diſtemper, p. 30, it is remarkable, he is the firſt author who mentions ſuch a condition of pulſe to have ever been obſerved in the ſcurvy.

Notwithſtanding all which, the pulſe and urine, or either of them, convince *Eugalenus* of the exiſtence of the ſcurvy, though in other reſpects the ſymptoms ſhould differ from it as much as the plague does from a dropſy. *Sufficiant ad denotandam mali cauſam quæ ab urina et pulſu indicia ſumuntur*, p. 120. *De his omnibus, certum à pulſu & urina, vel ab horum alterutro, indicium eſt, minimèque fallax*, p. 89. *Citra alia indicia, non ſemel ad morbi cognitionem nos ſola urina deduxit*, p. 23.

prove

prove the identity of theſe diſeaſes by other marks, and not by thoſe ſymptoms wherein the diſeaſe differed from itſelf.

In the former edition of this treatiſe I enumerated the ſeveral other diagnoſtics he gives of ſcorbutic diſeaſes, which were properly reduced into two claſſes, *viz.*

1*ſt*, Such ſymptoms as the before-mentioned conditions of pulſe and urine, which never were remarked in the ſcurvy by any but himſelf; and ſeem indeed more peculiar to other diſtempers:

2*dly*, Such as are common to this diſeaſe with many others. But theſe he ſeems to rely upon no further, than to corroborate the proofs he had from the pulſe and urine.

As theſe are the principal marks and diagnoſtics of the diſeaſes deſcribed by *Eugalenus*; among which there are not to be found any of thoſe ſymptoms which the authors preceding him thought abſolutely neceſſary to demonſtrate the exiſtence of the diſeaſe which they had deſcribed under the name of *ſcurvy*; and as *Eugalenus* aſſumed for demonſtrative and conſtant ſigns of this diſeaſe, ſuch as were never before obſerved in the true ſcurvy, nor are ever ſeen to occur in it at this day, (as afterwards will be more fully proved:) we muſt neceſſarily conclude, that he has deſcribed a different diſeaſe; which appears from his whole treatiſe. We need but mention the compariſon once more in this reſpect with the authors who preceded him. *Reuſnerus* wrote but four years before him; and has collected into a volume of conſiderable bulk, almoſt all that had been written upon the ſcurvy. After deſcribing the putrid gums and ſpots, he expreſſes himſelf thus. "Theſe are the pathognomic ſigns of the ſcurvy,

"with-

" without whoſe appearance the diſeaſe cannot " ſubſiſt *(m)*."

It may be ſaid, that though the diſeaſes were not preciſely the ſame, yet *Eugalenas* under the ſame name has characteriſed a certain diſeaſe, or ſpecies of diſeaſes, in which he has been followed by all other authors. This leads me to the moſt diſtinguiſhing characteriſtic of all the diſeaſes deſcribed in his book, and which is to be met with almoſt in every page. It is there called *Regula diagnoſtica generaliſſima (n)*, viz. *its being a diſeaſe not properly deſcribed by the ancients:* to which he often adds, its not ſubmitting to the cure preſcribed for it by theſe old authors.

He recommends the peruſal of his book to ſuch only as are converſant in the writings of the ancient *Greek* and *Roman* phyſicians *(o)*; otherwiſe he obſerves they will never be able to diſtinguiſh old diſeaſes from the new: all which, or what he imagined to be ſuch, he has promiſcuouſly claſſed, without any other diſtinction, under the general name of *ſcurvy*.

The true idea this author entertained of the ſcurvy, by which the reader may be enabled

(m) Et hæ ſigna ſunt ſcorbuti pathognomica, quæ ſine rei in qua ſita ſunt interitu abeſſe nequeunt. Reuſneri exercitat. de ſcorbuto, p. 328

(n) Viz. Nam ſi quis nobis in his regionibus morbus occurrat rarus, vel etiam aliquis veteribus cognitus, ſub aliis, et diverſis, atque plurimum ab eorum deſcriptione diſcedentibus ſignis, ſtatim mendacem ejus ſpeciem ſuſpectam habere oportet, et huc atque ad hunc morbum cogitationes dirigere, diligenterque cùm morbi mores, et cauſas ejus antecedentes, tum pulſum et urinam explorare, taliane ſint quæ huic morbo conveniant, eumque quadam ſuâ proprietate exprimant et demonſtrent. Soon after adding. *Non video quis præterea dubitationi locus eſſe poſſit, niſi perpetuò cogitationibus noſtris oberrare et incertum vagari velimus*, p. 179.

(o) P. 227.

to

to judge what particular diſeaſe, or ſpecies of diſeaſes, he characteriſed, is preciſely this.

He ſeems to have been of opinion, with an eminent phyſician of that age, who takes occaſion from *Solomon*'s ſaying, there was nothing new under the ſun, to aſſert, that all diſtempers were the ſame formerly as at preſent. To this our author, however, makes two exceptions, in the pox and ſcurvy *(p. 250)*; where he imagines that the one travels from the north, the other from the ſouth; and that, upon their meeting, they communicate and intermingle their poiſon with each other. But he was entirely unacquainted with hyſteric and hypochondriac ailments, and a train of others now going under the name of *nervous*. He knew very little of the rheumatiſm, rickets, and many others; which, if at all, are very imperfectly deſcribed by the ancients. Hence, whenever ſuch caſes occurred, with this peculiarity, of not being deſcribed in ancient authors, he directly pronounced them ſcorbutic.

Thus, he imagined, that the ſcurvy might aſſume the form of almoſt all diſeaſes, acute or chronic, incident to the human body; or, in other words, that the numerous and various diſtempers deſcribed in his book, from the plague to a ſimple intermitting fever, might be produced by this one ſcorbutic cauſe; and that each of theſe manifold diſeaſes might ſubſiſt ſingly and ſeparately, without the appearance of any ſymptom formerly obſerved in the ſcurvy, deſcribed by others; or even any one ſymptom common to thoſe deſcribed by himſelf, except the appearances in the urine and ſtate of the pulſe.

But as difference of climates muſt needs have a great influence, even on the ſame diſeaſes;

and thus we find the criſes and types of fevers and other diſtempers, to vary in theſe cold climates, from the deſcription given of them in more ſouthern countries, where the ancients practiſed. Theſe and other incidental circumſtances, neceſſarily induce a variation in the indications of regimen and cure. This our author makes no allowance for: but when the moſt common and uſual malady deviated in the leaſt from the graphical account given of it by thoſe accurate authors, eſpecially when it did not yield to the method of cure directed by them; all ſuch irregular and untoward ſymptoms he likewiſe referred to the ſcorbutic taint.

Now, whether the diſeaſe was altogether and purely ſcorbutic, or the ſcurvy was joined or complicated with another malady, no cure could poſſibly be made in either caſe, without the common and ſpecific antiſcorbutic herbs; which, upon the laſt ſuppoſition, were to be compounded with other medicines proper for theſe diſeaſes, and which, according to his own account, proved always ſucceſsful (*p*).

The vanity and preſumption of this author are indeed intolerable, when he aſſures us, that he would cure beginning conſumptions in fourteen days (*q*); palſies in five days (*r*), often in four, but in fourteen at moſt (*s*); violent tooth-achs in a few hours (*t*); ſevere quartan agues in ten days, otherwiſe not curable in a year (*u*). In

(*p*) *In his omnibus, cùm, propter multiplicem ſymptomatum varietatem raritatemque, cauſam ſubeſſe raram, et veteribus incognitam, conſiderarem; poſt varias habitas mecum deliberationes, et diligentem pulſuum urinarumque examinationem, tandem ſcorbuto adſcribendam inveni, conjecturam meam ac* ϛοχασμὸν *de his, comprobante felici curationis eventu*, p. 30.

(*q*) P. 192. (*r*) Obſ. 16. et 23. (*s*) P. 63.
(*t*) P. 52. (*u*) P. 40.

ſhort,

ſhort, according to him, no diſeaſe is any longer incurable; and by his means the art of phyſic is reſtored to credit and reputation *(w)*.

His extreme ignorance in phyſic, appears, among many other inſtances, from his taking a proneneſs to faint in childbed-women for a demonſtrative ſign of the ſcurvy *(x)*. In a man of ſeventy years, he judged a mortification of the foot to be ſcorbutic, by the black and purple ſpots which appeared upon the mortified part; and the ſmall, weak, and unequal pulſe, naturally to be expected in ſuch a ſituation *(y)*.

He ſeems to have known no other diſtinction betwixt the *lues venerea* and ſcurvy, but the pulſe *(z)*, and ſometimes the urine *(a)*.

All the ſucceeding authors, for a conſiderable time after *Eugalenus*, follow him moſt religiouſly and minutely in their deſcription of this diſeaſe. So great a compliment is paid him by *Martini*, *Horſtius*, and *Sennertus*, that they copy out of him with a ſcrupulous exactneſs, not only the many ſymptoms he deſcribes peculiar to the malady (and eſpecially his great dependence on the

(w) Futurum enim eſt, ut in morbi notitiam deductus, paucis diebus graviſſimas quaſque febres ſit curaturus, quibus nulla priùs veterum profuit curatio. Soon after adding, *Quæ, quia à nemine hactenus ſatis animadverſa ſunt, quod ſciam, hinc factum eſſe arbitror, quòd tantopere vilescere apud nos et in his regionibus medicina cœperit, utpote quæ nullius febris curationem certò promitteret*, p. 36.

And repeating the ſame remark in another place, *Hoc ſine arrogantia dicere poſſum, me certam harum febrium curationem promittere omnibus audere, qui noſtris præceptis ac monitis obtemperare, et in aſſumendis hiſce medicamentis conſilium noſtrum ſequi non detrectant: ſiquidem (abſit arrogantia dicto) non minùs certò harum febrium curatio mihi nota eſt, atque digitorum numerus.* Obſ. 56.

(x) P. 194. 197. Item, Obſ. 11. *(y)* P. 108.
(z) P. 51. *(a)* P. 263. Vid. p. 60. 126. 137.

pulſe

pulſe and urine, for aſcerting its exiſtence); but where he or his editors, in their extraordinary relations of ſcorbutic caſes, mention ſome very uncommon and ſingular appearances, theſe are likewiſe added by them to the diagnoſtics of the ſcurvy. Such extraordinary caſes were attributed to this evil, as perhaps are not to be paralleled in the records, I may ſay the legends of phyſic.

But what additional obſervations they themſelves made, may be ſeen in the proper place (*b*). Their merit ſeems chiefly to have conſiſted in furniſhing us with cures, or at leaſt with many medicines for the different diſeaſes deſcribed by *Eugalenus*. However, as an apology for *Sennertus*, he informs us, that he tranſcribed chiefly from this laſt author, becauſe the ſcurvy was not a diſeaſe ſo frequent or common in his own country (*c*).

(*b*) Part 3. (*c*) *Tractatus de ſcorbuto*, p. 146.

To give the reader ſome idea of the conſequence of ſuch writings, and the high eſteem theſe authors gained by their works; we find *Moellenbrook*, who pretended likewiſe to write upon this diſeaſe, or at leaſt a ſpecies of it, ſetting out in his introduction thus. *Immo nullus ferè jam morbus eſt, cui ſe non aſſungat ſcorbutus; unde niſi antiſcorbutica interdum reliquis admiſceat medicamenta, vix eos curabit medicus. Quod in praxi meâ expertus ſum non raro. Et novi aliquos, qui ſcorbutum eſuſque antidota negligentes, in morborum curatione, ſuum non potuerunt obtinere ſcopum: ac propterea meo exemplo edocti, maximo cum ægrorum ſuorum emolumento, eadem poſtea exhibuere. Quamvis autem valdè frequens ſit ſcorbutus, ſymptomatibus tamen variis oculatiſſimos ſæpè medicos illudit et decipit; immo ex mille medicis (ut ſcribit Frentag. cent. 1. obſerv. 99.) ne ternos quidem inventas ſcorbuti ſat gnaros, ut ut ſe fingant Æſculapios. Hinc tantæ ægrotorum ſtroges, tanta mortalitas, tanta archiatrorum, necdum gregariorum errata; ut ſtatuâ mereantur Fracaſtoriana ſplendidiores, ære perenniores, viri clariſſimi Sennertus et Martinus, (adderem ego Gregorium Horſtium) qui, penicillo plus quam Apelleo, medicorum opprobrium nobis depinxerunt. Meruiſſet pyramidem Eugalenus, ni curationem ſubticuiſſet.*

Eugalenus

Eugalenus had not talents ſufficient to form any ſort of theory for illuſtrating the nature of the many diſeaſes referred by him to the ſcorbutic taint. The principles he aſſumes upon particular occaſions, of obſtructions in the liver and ſpleen, overflowing of the *atra bilis*, and corruption of the humours, are all borrowed from other authors, lamely explained by him, and often contradicted in his book. *Sennertus*'s hypotheſis confutes itſelf. So it was left to Dr. *Willis*, with the aſſiſtance of Dr. *Lower*, to clear up a ſubject that lay under very great obſcurity, by reducing the whole into an ingenious ſyſtem, which continues eſtabliſhed and adopted even at this day.

It may be worth while to take notice, that until *Eugalenus*'s time, as before-mentioned, putrid gums and ſwelled legs were the pathognomic ſigns of the ſcurvy. This laſt author made them to be a ſmall, quick, and unequal pulſe, together with a peculiar ſtate of urine *(d)*. But ſuch a condition of pulſe is not mentioned by *Willis* to have been obſerved in any of the caſes he gives to illuſtrate his account of this diſeaſe; nor is it ſo much as mentioned in his book, except under the title of the *Pulſus inordinatus (e)*, which is ſaid to occur only in the moſt inveterate ſcurvy *(f)*. And although he lays great ſtreſs on the appearances in the urine *(g)*; yet here he in ſome reſpects likewiſe differs from *Eugalenus (h)*.

There is another very material difference in their accounts of this diſeaſe. *Eugalenus* found it in his time very eaſy to remove *(i)*. Accordingly, his book abounds with ſome very ſpeedy and miraculous cures. Whereas now the ſcurvy is

(d) Vid. part 3. *(e)* P. 228. Amſterdam edition. *(f)* P. 254. *(g)* P. 256. *(h)* P. 229. *(i) Cognito morbo, facilè curatur.* Eugalen. p. 148.

become

become much more obſtinate, proceeds from various and oppoſite cauſes, requiring very different methods of cure; the ſimple antiſcorbutic herbs being by no means ſufficient to remove it.

Willis having given a very different account of this diſeaſe from all others; as will appear by comparing the ſymptoms deſcribed by each in the third part of this treatiſe; in my former edition I examined what ſingular and diſtinguiſhing marks and characteriſtics he gave of ſuch a variety of diſtempers, in order to their being with any manner of propriety claſſed under one denomination, and referred to the diſeaſe we are now treating of. I there proved, that the ſigns given by him of the ſcurvy *(k)*, are at beſt but doubtful and equivocal, if not moſtly falſe and contradictory to former accounts; and obſerved, that in his manner of giving a detail of almoſt all diſtempers incident to the human body, in a progreſſion from the head to the foot, without any diſtinguiſhing marks to know when they proceeded from the ſcurvy, and when from other cauſes, he has acted much more irrationally than *Eugalenus*; who, although he aſcribes as many diſeaſes to the ſcorbutic taint, yet gives the peculiar characteriſtics of pulſe and urine proper almoſt to each; by which they may be known to proceed from that, and no other cauſe, which *Willis* no where does.

He indeed opens a little the myſtery of his book towards the concluſion of it, in the relation of the caſe of a nobleman, which ſeems to have been as different from the ſcurvy as from the pox. "As this caſe, ſays he, cannot properly be re- "ferred to any other diſeaſe, it may juſtly be "deemed ſcorbutic *(l)*."

(k) Willis, cap. 3. p. 247. *(l)* P. 334.

Dr.

Dr. *Willis* is copied by moſt of the ſucceeding authors, eſpecially by *Charleton*; by *Hoffman*, in the diſtribution of the ſymptoms; and by *Boerhaave*, in the grand diſtinction into hot and cold ſcurvy, in the proceſs of cure, as alſo in the medicines preſcribed for it. But theſe already mentioned, having been deemed the ſtandard and original writers on this ſubject, I ſhall not trouble the reader with any farther animadverſions upon them or their followers. I am perſuaded, that many obſervations will naturally occur to thoſe who peruſe Part III. of this treatiſe with attention.

What were the ſentiments of a moſt judicious phyſician, may be there ſeen by looking into *Sydenham*; what were the dreadful conſequences of ſuch writings, will appear by looking into *Kramer:* but how many unhappy patients muſt have ſuffered in this diſeaſe, before the ſlaughter of thouſands at a time *(m)* began to open the eyes of mankind, is too melancholy a ſubject to dwell upon!

We are now arrived to a period of time, when many diſtinctions and diviſions were introduced and made in the ſcurvy. An inquiry into the propriety of theſe, we ſhall make the ſubject of the following chapter.

CHAP. II.

Of the ſeveral diviſions of this diſeaſe, viz. *into ſcurvies cold and hot, acid and alcaline*, &c.

AUthors had now gone on for near ſeventy years *(a)*, by collecting from each other, and adding ſomething themſelves, to make up a

(m) Vid. *Kramer.* *(a)* From *an.* 1604, when *Eugalenus* wrote.

very extraordinary number of ſcorbutic ſymptoms. They had aſcribed to this modern calamity, almoſt every diſtemper or frailty *(b)* incident to the human body; ſo that no room was here left for farther invention.

The daily experience of practitioners, and their obſervations in phyſic, muſt ſoon have convinced them of the inefficacy of one uniform method of cure. The ſimple antiſcorbutics, how much ſoever extolled by *Eugalenus*, failed to remove the many various and complicated diſorders that were claſſed under the name of *ſcurvy*. Thus they found themſelves under a conſequent neceſſity of having recourſe to different diſtinctions at firſt, diviſions and ſubdiviſions afterwards, of the malady. And as the *Materia medica* abounded with antiſcorbutics of different and oppoſite virtues, taken from all parts of the animal, mineral, and vegetable kingdoms, it was proper to diſtinguiſh for what particular ſymptoms, diſeaſes, or ſtages of the diſeaſe, each was peculiarly adapted.

But it may be aſked, In what diſeaſe did ſuch diſtinctious become ſo neceſſary? And it evidently appears, in that alone *which was firſt deſcribed by* Eugalenus, *and from him tranſcribed by* Horſtius *and* Sennertus; *and has been deſcribed by* Willis, *and his copier* Charleton. But if the critical remarks that have been made upon theſe original authors are admitted, the diſtinctions made here are founded in abſurdity; and the former chapter is a ſufficient confutation of them. Theſe indeed, when firſt introduced by *Willis*, were not univerſally received. *Chameau*,

(b) Omnes qui ex ſenio moriuntur, moriuntur etiam ex ſcorbuto. Dolæus.

with

with great ſtrength of reaſon, confutes *Willis*'s hypotheſis; as many others have done.

But of multiplying diviſions and claſſes of the ſcurvy there became no end. In which *Gideon Harvey*, phyſician to king *Charles* II. ſeems to have exceeded all others *(c)*.

This writer and *Charleton* are the only authors who deliver the ſymptoms peculiar to the different kinds of ſcurvies, by which they may be known and diſtinguiſhed from each other (if we except a very modern writer, *viz.* Dr. *Nitzſch (d)*, who has thought proper to introduce many groundleſs diviſions and ſubdiviſions firſt made by himſelf in this diſeaſe) Whereas others found this taſk too difficult for them; and that it was much eaſier to give a long detail of ſymp-

(c) He makes above twenty different ſpecies, ſuch as a flatulent, a cutaneous, an ulcerous, a painful ſcurvy, *&c.* a mild or malignant ſcurvy, an *Engliſh* or *Dutch* ſcurvy, a ſea or a land ſcurvy, *&c. &c. New Diſcovery of the Scurvy*, cap. xv.

(d) Vid. part 3. chap. 2. The obſervations in his book are ſufficient of themſelves to confute the diviſion of this diſeaſe into a hot and cold ſcurvy. The truth of the matter is this, when the doctor was ſent to *Wiburg*, *anno* 1732, (vid. part 3. chap. 2.) he ſeems to have been ſtrongly prepoſſeſſed with an opinion of this diſtinction; and in his paper very unjuſtly blames the ſurgeons in the place for not having attended to this ſcholaſtic diviſion of ſcurvies. But when by farther experience in a very great number of patients he had acquired a more perfect knowledge of the diſeaſe, one cannot help remarking what pains he takes ſtill to ſupport this fanciful diſtinction, in order to juſtify the aſperſions thrown upon the ſurgeons in *Wiburg*: with what ſucceſs, I leave the reader to judge, and ſhall only obſerve, that what he has deſcribed under the denomination of the ſlow or cold ſcurvy, has by every other author on the ſubject but himſelf been deemed the putrid, hot, and alcaline ſcurvy. As every diſeaſe, or ſpecies of it, can only be characteriſed by its ſymptoms, what he terms the hot ſcurvy, has not one ſymptom peculiar to itſelf but what frequently occurs in other ſcurvies, eſpecially when complicated with either a fever or the pox.

toms and diſeaſes; leaving it to the ſagacity of their readers to apply fewer, more, or all of them, to the different ſpecies of ſcurvies conſtituted by them. For this purpoſe, it was alone ſufficient that their theories were rightly underſtood; as when the ſulphurs abounded in the blood, and when they were depreſſed; when this vital fluid was too hot or cold, or inclined to an acid, alcaline, and briny acrimony, or an oleous rancidity.

The firſt and beſt authors *(e)*, whoſe method of cure was ſimple, uniform, and for the moſt part ſucceſsful, having conſequently no occaſion for ſuch various diſtinctions, univerſally aſcribed the malady to a fault in the ſpleen. They miſtook this diſeaſe for a very different one deſcribed by *Hippocrates (f)*. But it being ſuppoſed, that the ſcurvy ſince their days, had by contagion *(g)* diffuſed itſelf over the whole world, infected the child unborn *(h)*, and that few eſcaped this modern calamity *(i)* (as a pimple appearing on the ſkin, was thought to indicate this miſchief lurking in the blood); to ſupport theſe ill-grounded conceits, theories were invented, galenical, chymical and mechanical, according to the whim of each author, and the philoſophy then in faſhion.

Firſt, The galenical qualities of heat and cold, which *Willis* defines *a ſulphureo-ſaline, and a ſalino ſulphureous ſtate of humours*; and which the more modern writers have diſtinguiſhed by

(e) Ronſſeus, Wierus, Echthius, Albertus, Brucæus, Erunnerus, &c. *(f)* Vid. part 3. chap. 1.

(g) Tacitè ſerpit inſidioſum virus ab hoſpite in hoſpitem, ſpiritûs, lecti, menſæ, poculorum communione. Charleton, p. 17. *Contagium celere.* Boerhaave.

(h) Fuere qui liberis ſuis ſcorbutum legarent jure poſſidendum, hereditario. Charleton, p. 17. Vid. Willis, p. 242.

(i) Nemo ferè hodie ab eo planè immunis exiſtit. Dolæi Encyclopædia. See chap. 1. p. 30.

the

the appellation of *alcaline* and *acid ſcurvies*, were introduced; and the diſtinction continues to this day. By which they mean, that the ſcurvy occurs in different habits and conſtitutions, or at different times; proceeding from as oppoſite cauſes as can well be imagined; as from heat and cold, or the hoſtile and repugnant qualities of an acid and alcali: and accordingly the different kinds of it require the moſt different methods of cure; what proves ſalutary in one ſpecies, being experienced hurtful, nay, poiſonous in another. This was the conſequence of *Eugalenus*'s book, and other like writings.

It muſt be owned, the general name of a diſeaſe does not always lead us to the true nature of it. The habit of the body, and many other circumſtances, are carefully to be examined; as alſo, the different degrees and ſtages of it, together with whatever other ſpecialties may occur, in order to furniſh juſt prognoſtics, proper indications, and a rational method of cure. But the diviſions and diſtinctions that have been made here, are not only altogether unneceſſary and perplexing, but have a pernicious tendency to confound it with other diſeaſes, between which there is not the leaſt analogy to be found.

The term *cold* or *acid ſcurvy*, is often met with in converſation, and frequently in the writings of very great phyſicians. Now I take it for granted, that they who uſe this term, do it in the ſame ſenſe as the moſt eminent writers on the ſcurvy who firſt introduced it, and have explained its meaning. It will therefore be ſufficient for my purpoſe, to ſhew in what ſenſe it was underſtood by them, and indeed by all who have attempted to explain it.

Soon after *Eugalenus*'s book was publiſhed, it was found he had deſcribed in it many ſymptoms of the hypochondriac diſeaſe. Accordingly, *Sennertus*, in the preface to his ſo much eſteemed treatiſe, tells us, as an apology for having tranſcribed this author, that if we live in a country where the ſcurvy is not very common, we ſhould at leaſt learn from his book many ſymptoms of the hypochondriac diſeaſe. Yet what is ſurpriſing, this author, as well as all other ſyſtematic writers, have deſcribed the latter, in other parts of his works, as altogether different from the ſcurvy.

Theſe authors, by confounding the two diſeaſes, occaſioned the utmoſt perplexity to ſucceeding writers on the ſubject. *Willis*, and all the followers of *Eugalenus*, maintain that the ſcurvy was nearly allied to the hypochondriac diſeaſe. But to ſet limits to both, and determine wherein they differed, puzzled authors not a little. Some thought they were ſo cloſely connected as not to be deſcribed ſeparately *(k)*. The excellent *Riverius*, who knew little of this diſtemper but from books, conjectured it to be the hypochondriac diſeaſe, complicated with a certain malignity. Some were of opinion it was this laſt when beginning. But the more general notion of theſe miſtaken authors *(l)* was, that the melancholic malady often terminated in the ſcurvy, as being the laſt and moſt exalted degree of it. The moſt judicious, ſuch as Drs *Pitcairn* and *Cockburn* (the laſt of whom eſpecially had great opportunities of being acquainted with the ſcurvy) tell us plainly, that if any thing is meant by the term of a *cold ſcurvy*, it is

(k) Ettmullerus, Dolæus, &c.
(l) Moellenbroek, Barbette, Deckers, &c.

nothing

nothing elſe but the hypochondriac diſeaſe. And any perſon will be convinced, that this is truly the caſe, by looking into *Charleton*; who muſt mean that, if he means any thing; and is the only writer of character who has diſtinguiſhed the acid ſcurvy by its ſymptoms and cure *(m)*.

But it is certainly paying too great a compliment to *Eugalenus*, to extend this denomination to the hypochondriac diſeaſe, or any ſpecies of it; to peſtilential fevers, cancers, buboes, *&c.* as he has done. Nor is it ſufficient to alledge, that time and cuſtom have given a ſanction to ſuch terms; as this is complimenting ignorance and cuſtom, in a manner no way conſiſtent with the improvement of arts and ſciences.

The hypochondriac diſtemper, according to *Sydenham (n)*, is the ſame in men, that hyſteric diſorders are in women. In this, with ſome little variation, moſt phyſicians agree with him. But ſuch diſeaſes have no manner of connection with the ſcurvy: their ſeat and cauſe in the human body, and eſpecially their ſymptoms, are widely different; ſo that there is hardly to be found one ſymptom in either, which is common to both.

It is indeed ſurpriſing, that ſome very eminent authors ſhould have endeavoured to perſuade us, that from ſuch oppoſite cauſes, as heat and cold, or alcaline and acid ſalts abounding in the body, not only the ſame ſeries of ſymptoms ſhould ariſe (for if they do not, they ſhould certainly have noted which were peculiar to each) but that then likewiſe the ſame ſtate of the blood ſhould alſo exiſt. Thus, the learned *Boerhaave*

(m) P. 40. He ſays, it is ſo nearly allied to the *melancholia hypochondriaca*, as to differ from it only in certain degrees.

(n) Vid. Diſſer. epiſtol. ad Gul. Cole.

and *Hoffman*, after giving a very regular detail of ſymptoms, wherein they widely differ from each other, both agree in aſſigning one only immediate cauſe of all ſcurvies; which they ſuppoſe to be an extraordinary ſeparation of the ſerous part of the blood from the *craſſamentum*; the former being diſſolved, thin, and acid; whilſt the latter, or the grumous part, is too thick and viſcid. From the predominancy of different acrimonious ſalts, or oils *(o)* in the too thin ſerous humours, the ſcurvy was to be denominated, according to *Boerhaave*, either *muriatic*, *acido-auſtere*, *fœtid-alcaline*, *rancid-oily*, *&c.* *(p)*.

It

(o) Vix equidem plura ſulphurum ſaliumque genera in hermeticorum ergaſteriis, quàm in ſanguine ſcorbuticorum eſt reperire. Charleton, p. 58.

(p) Boerhaave having deſcribed the ſymptoms peculiar to the beginning, progreſs, and end of the malady, it may be aſked, To which of the different ſcurvies are the ſymptoms (*Aph.* 1151.) and their ſo regular progreſſion, to be applied? It would appear, to all of them, not only by his deſcription in this manner, but by the preſcriptions in his *Materia medica*; where, for example, putrid gums, the pathognomic ſign of the malady, as will afterwards be ſhewn, are ſuppoſed to occur both in the hot and cold ſcurvy, which are the moſt oppoſite ſpecies of the diſeaſe. Vid. *Aph.* 1163.

The whole indeed conſiſts of ſcraps taken from different authors. He has picked the ſymptoms out of one book, *Sennertus*'s collection, as he acquainted the pupils in his lectures; the cure out of another, *viz. Willis*. But it will appear to any perſon who peruſes the authors from whom he has borrowed the deſcription of the ſymptoms, *viz. Echthius*, *Wierus*, *&c.* that they deſcribed a very different diſeaſe from what *Willis* did. Dr. *Willis*'s method of cure may perhaps be rationally applied to the diſeaſes he deſcribed; but is by no means adapted to the malady characteriſed by the firſt writers on the ſcurvy.

I have been told, that *Boerhaave* has deſcribed a *cacochymia* under the appellation of *ſcurvy*. But if any thing elſe is meant beſides a ſcorbutic *cacochymia*, which muſt be the ſame thing as the diſeaſe called *ſcurvy*, why miſapply

and

It were to be wiſhed, after having laid down as the ſole immediate cauſe of all ſcurvies whatever, however different in other reſpects they might be from each other, ſuch a broken texture in the blood, and a remarkable *lentor* or viſcidity of its grumous parts, with ſo great a *colliquation* and acrimony in the ſerous humours alone, that thoſe learned authors had furniſhed us with ſome better reaſons for this opinion. Here we muſt have recourſe to the firſt author of this hypotheſis, *Moellenbroek*, in his book *De varis, ſeu arthritide vaga ſcorbutica.*

But it may be proper, before we go farther, to remark, that this writer has taken upon him to deſcribe a diſeaſe as ſcorbutic, which *Wierus*, the firſt who mentions it, had deſcribed as a very different one, in a treatiſe *De morbis aliquot hactenus incognitis*; in which he tells us, the one was peculiar to the people of *Weſtphalia*, the other to *Holland*, *&c.*

Now

and confound terms? This muſt occaſion a confuſion of the things themſelves; and hath produced very dreadful conſequences, of which I will give but one inſtance. Mercury may be reputed a poiſon in the ſcurvy; *Kramer* gives an account of 400 men deſtroyed by it (See Dr. *Grainger*'s letter, part 2. chap. 2.): yet *Boerhaave* recommends it; and in ſuch a ſtate of the malady (*Aph.* 1151. *n.* 4.) where it muſt certainly become a very deadly one. This fatal miſtake has been copied from him, and even inforced by his authority. See *Heucher.*

It is true, he ſays, what is proper for one ſcurvy, is a poiſon in another. But this is not eaſily reconciled with the cauſes he aſſigns of the diſeaſe; all which (except the *cort. Peruv.* which is a good antiſcorbutic) would ſeem, either ſeparately or jointly, to produce ſimilar effects. Let us ſuppoſe, for a moment, they produced very different effects; what criterion have we to diſtinguiſh, by his aphoriſms on this diſeaſe, a poiſonous from a ſalutary medicine? As I have before obſerved, he delivers the moſt regular uniformity of appear-

Now it is this author, in his account of what he calls *the ſcorbutic wandering gout*, who (*q*) makes the immediate cauſe of the ſcurvy to be a ſcorbutic ſalt. He obſerves, that this ſalt muſt needs be volatile, otherwiſe it would too tenaciouſly adhere to the parts, as in the true gout; and the pains would not move or ſhift ſo ſuddenly as they do in the ſcorbutic gout (*r*): and for the ſame reaſon it muſt reſide in the ſerum alone, as the moſt proper vehicle to circulate it ſo quickly. This the other viſcid humours with which ſcorbutic habits abound, as is plain from the blood taken from their veins, cannot be ſuppoſed to do. He afterwards aſſigns the viſcidity of the humours as the cauſe of the putrid gums and ſome other ſymptoms (*s*).

The celebrated profeſſor *Hoffman* (*t*) makes uſe of pretty much the ſame arguments. He

appearances; and the pathognomic ſigns ſeem to be the ſame in every ſpecies of ſcurvy.

To ſo great an authority, which, as far as is conſiſtent with truth and the good of mankind, I ſhall always reſpect, may be oppoſed a much greater, *viz.* the experience of a phyſician who had the greateſt opportunity perhaps any one ever had, of being converſant with ſcorbutic patients; woful experience gained by being witneſs to the death of many thouſands, when *Boerhaave*'s *Aphoriſms* on this ſubject were of no uſe to him: *Non niſi unica ſpecies veri ſcorbuti datur, eaque fœtida, putrida, &c. Graviſſimus eſt error, quamlibet cacochymiam, imo etiam cachexiam, &c. ſcorbutum putare, quam verus ſcorbutus ſpecies cacochymiæ ſingularis ſit.* Kramer epiſtol. p. 27. 28. Such indefinite terms are indeed but a ſubterfuge for ignorance, and have been long a reproach to the art of medicine. *Antiquorum* cacochymia, *et modernorum* ſcorbutus, *æqualia habent fata; nam nomen ſuum in omnibus illis affectibus dare debent, ubi cauſæ morborum et ſymptomatum nullo alio vocabulo exprimi poſſunt. Et ſic tanquam* aſylum ignorantiæ *hæc nomina conſideranda veniunt.* Junckeri conſpectus medicinæ, tab. 69.

(*q*) P. 11. (*r*) P. 12. (*s*) P. 18.

(*t*) Medicin. ſyſtematic. tom. 4. part 5. cap. 1.

judges

judges the ſalivation, flying pains, and hæmorrhages uſual in this diſeaſe, to proceed from the thinneſs and acrimony of the *ſerum*, and its ſeparation from what he calls the ſolid parts of the blood; and the more fixed pains, tumours, &c. to ariſe from the viſcidity or *lentor* of the latter.

But the truth is, there is no ſuch ſtate of blood in this diſeaſe. It is indeed contrary to reaſon, to ſuppoſe, in ſo high a degree of putrefaction as appears in ſcorbutic caſes, that the *craſſamentum* of the blood ſhould continue thus thick and viſcid; which, by all experiments made on putrified blood, appears quickly to be diſſolved and thinned by corruption *(u)*. It certainly is ſo in all putrid diſeaſes. This is further made evident to a demonſtration, by the diſſections afterwards to be related *(w)*; or, if theſe be liable to objections, from the appearance of the blood in Lord *Anſon*'s ſcorbutic crew while alive *(x)*; which in every ſtage of the diſeaſe, and from whatever part of the body it was diſcharged, was always found in a different condition: the *craſſamentum* was altogether diſſolved and broken; and there was not ſo much as any regular ſeparation *(y)*, much leſs ſuch an extraordinary one, as has been by ſome made the only immediate cauſe of the ſcurvy, the baſis of a theory, and of a practice founded upon it.

(u) By Dr. *Pringle*'s experiments, not only the *craſſamentum* of the blood is the firſt reſolved by putrefaction, which the *ſerum* reſiſts for a much longer time; but the ſeptic or putrid particles ſeem principally to be intangled in the grume: ſo that ſuch acrimony would appear to reſide chiefly there, by experiment 42. Vid. Appendix to Obſervations on the diſeaſes of the army.

(w) Part 2. chap. 7. *(x)* Ibid.

(y) This is confirmed by *Kramer*. See Part 3. and Dr. *Grainger*'s obſervations, chap. 5. part 2.

The aſſuming likewiſe the chymical principles of acid and alcaline ſalts, as the foundation of a method of cure, from a preſumption of the predominancy of ſuch ſalts, or of an acid or alcaline tendency in the blood in this diſeaſe, is exceptionable on many accounts.

We may allow the predominancy of ſuch ſalts, or the exiſtence of ſuch an humour in the *primæ viæ*, as may be ſuppoſed to have the phyſical marks and properties of what is ſaid to be acid or alcaline. But as the blood of no living animal was ever found to be either acid or alcaline *(z)*, it is hard to grant the exiſtence of ſuch qualities, latent and occult there, when they do not manifeſt themſelves by any ſigns in the body, from which they can be aſſured of their exiſtence. Theſe, according to all the authors of ſuch theories, ought principally to be in the firſt paſſages. But, in the higheſt degree of the hot, putrid, and what is called the *alcaleſcent ſcurvy*, there is generally neither loſs of appetite, putrid belchings, nor any other marks, delivered by thoſe authors, as proofs of an alcaleſcent tendency in the ſtomach and inteſtines; nor is there commonly any præternatural thirſt, or heat of the body, ſuppoſed always to accompany an alcaleſcent ſtate in the blood. On the contrary,

(z) Although the recent urine of thoſe who took Mrs. *Stephens*'s medicine was found to effervеſce with acids, yet this experiment by no means authoriſes us to conclude that the blood of ſuch people was alcaline, for very obvious reaſons. It however furniſhes one of the ſtrongeſt arguments againſt the opinion of putrid ſcurvies being of an alcaleſcent nature; as pills made of ſoap, garlic, and ſquills, was the common medicine given by our moſt experienced navy-ſurgeons, and uſed at ſeveral hoſpitals, particularly at *Gibraltar*, for recovery of many thouſand ſeamen half-rotten in this diſeaſe.

ſuch

ſuch people have for moſt part a good appetite, without any heat or drought, even till their death.

One would naturally have expected here, eſpecially in the *muriatic ſcurvy*, as it is denominated (which in another place ſhall be proved altogether a chimerical diſtinction), a violent thirſt, a vehement deſire of aqueous and diluting liquors. Theſe alſo would ſeem the moſt rational and effectual remedies, in ſuch a ſaline ſtate of blood, at leaſt upon chymical principles. Accordingly, a great chymiſt, *Hoffman (a)*, though he admits different ſalts in the blood as the cauſe of ſcurvies, obſerves, that nothing can be ſo ridiculous as the laboured and anxious pains taken to correct theſe by oppoſite ſalts. "For (ſays he) I "will prove it to a demonſtration, there is but "one way, and it is the moſt effectual and ſafeſt, "to correct morbid ſalts of any kind; that is, "by diluting them ſufficiently with water." His reaſoning is at leaſt plauſible, it being certain water is the proper menſtruum and ſolvent of all ſalts.

The terms of *acid* and *alcaline*, have not indeed been ſufficiently defined and reſtricted, ſo as to be a very ſolid foundation for any theory of diſeaſes *(b)*, beyond thoſe of the *primæ viæ*. For even ſuch as are generally deemed of either claſs, though obtained in their utmoſt purity, are found to differ extremely from each other in their properties, more eſpecially in their effects

(a) Medicin. ration. ſyſtem. tom. 4. part 5. cap. 1.

(b) Fruſtra quærimus limites quibus utralibet ſpecies contineri debeat. Hinc quàm rectè ii faciunt, non difficilis eſt conjectura, qui theorias, non chymicas modo, ſed et medicas, ex acidorum alkaliumque doctrina confingunt, dum ne vocabulorum quidem vim intelligunt. Jo. Friend prælect. chymic. p. 12.

upon

upon the human body *(c)*; as unfermented and fermented, vegetable and foſſil acids do; ſome coagulating, others attenuating the blood. Thus likewiſe, volatile and fixed alcalies differ extremely, though pure. But this purity being ſeldom attainable, their virtues and properties are ſtill infinitely more varied, according to the manner of their preparation, and their different and various combinations with other ſubſtances.

But to bring this matter to a concluſion: Such theories are entirely overthrown, upon having recourſe to experience, the only teſt by which they muſt ſtand or fall. We find in practice, that in ſuch hot, putrid ſea-ſcurvies, as have been referred to the alcaline claſs, the hot alcaleſcent plants, *viz.* creſſes, onions, muſtard, and radiſhes, prove ſerviceable. Theſe, from ſuch theories, have been condemned by authors, as noxious and pernicious in the higheſt degree. But the contrary is demonſtratively evinced, by the deplorable caſe of the ſailor left behind at *Greenland*, related by *Bachſtrom* and others, who was cured by ſcurvy-graſs alone *(d)*; and by the experience of all our naval hoſpitals, where the moſt high and putrid ſcurvies are daily removed by freſh fleſh broths; wherein are put great quantities of celery, cabbage, colewort, leeks, onions, and other alcaleſcent plants. There occurs ſuch patients every ſpring in *Greenwich* hoſpital, who are cured by the juice of *Engliſh* ſcurvy-graſs,

(c) Vid. Hoffman. obſerv. phyſic. chymic. lib. 2. obſ. 29 et 30.

(d) Though it is not ſo acrid as our ſcurvy-graſs, yet it has a tendency that way. See a letter concerning the *Greenland* ſcurvy-graſs, part 2. chap. 5. which is a ſufficient confutation of the vulgar error, that acids alone are proper in putrid ſcurvies.

without

without the addition of any one ingredient to abate its pungency and acrimony (*e*): but in ſuch caſes all acid fruits and herbs are likewiſe experienced to be of great benefit. So that the uncertainty of ſuch theories plainly appears. And they ought the more now to be diſregarded, as putrid ſubſtances and alcalines are proved by experiments to be different (*f*). Yet it was upon a ſuppoſition of their bearing a great ſimilitude to each other, or being properly different degrees of the ſame thing, that this theory was firſt deviſed. Upon the faith of which, many improper chymical preparations, and eſpecially oppoſite ſalts highly extoled in ſuch caſes, have been recommended and adminiſtered in the ſcurvy, to the manifeſt detriment of the patient. Be it remembered, *Chymia egregia ancilla medicinæ, non alia pejor domina.*

CHAP. III.

Of the diſtinction commonly made into a land and ſea ſcurvy.

THIS diſeaſe has been always moſt common at ſea. It is well known there in the preſent age, by reaſon of the frequent voyages to the moſt diſtant parts of the world. The ſymptoms, though numerous, are yet obſerved to be regular and conſtant; ſo that the moſt ignorant ſailor, in the firſt long voyage, becomes well acquainted with it. But as many were ſuppoſed to die at land of the ſcurvy, though none

(*e*) Communicated by Dr. *David Cockburn*, phyſician to that hoſpital.

(*f*) See Dr. *Pringle*'s curious experiments read before the Royal Society.

of

of the moſt equivocal and uncertain, much leſs the uſual ſymptoms of the marine diſeaſe, appeared; it became neceſſary, in order to ſave the credit of the phyſician, and to juſtify his opinion of the diſeaſe, to pronounce it *the land-ſcurvy*, or a ſpecies of ſcurvy different from that at ſea.

This is a diſtinction often made in converſation, and ſometimes in books. But in order to judge of its juſtneſs and propriety, it may be neceſſary to premiſe, that ſuch appearances or ſymptoms, as are peculiar to the nature of a malady, and are more conſtantly experienced to accompany it, are called its *pathognomic* or *demonſtrative ſigns*; and theſe conſtitute the greateſt medical evidence which can be obtained of the identity of diſeaſes. Beſides which, it is a corroborating proof of their ſameneſs, if they proceed from ſimilar cauſes: And, laſtly, if they are removed by the like medicines or method of cure.

1*ſt*, As to the pathognomic ſigns of this diſeaſe: If we compare its ſymptoms as deſcribed by *Echthius*, *Wierus*, and all other authors till the time of *Eugalenus* (*g*), with the accounts given of them in books of voyages, particularly the extraordinary narrative of what happened to the great Lord *Anſon*'s crews in their paſſage round the world (*h*), we ſhall perceive an entire agreement in the eſſential ſigns of the diſtemper, and appearances ſo ſingular as are not to be met with in any other.

Now this evil the medical writers have deſcribed as peculiar to certain countries. They tell us of its being epidemic one year over all *Brabant* (*i*); ſome years in *Holland* (*k*). *For-*

(*g*) Vid. Part 3. (*h*) Ibid.
(*i*) *Dodonæus, Forreſtus.* (*k*) *Ronſſeus.*

reſtus,

reſtus, though he had frequent opportunities of ſeeing it in ſailors, yet in all his hiſtories gives us but one caſe of a mariner. His moſt faithful accounts of this malady, are illuſtrated by patients who had always lived at land; ſome of whom muſt have been infected in a very high degree, as they dropped down dead ſuddenly, to the ſurpriſe of their relations; of which he gives an inſtance. *Dodonæus (l)*, a very accurate writer on the ſcurvy, relates no caſes of it in ſailors, but in people on ſhore, particularly in a perſon who contracted it in priſon *(m)*.

It is indeed remarkable, that the firſt juſt deſcription publiſhed of this diſorder in *Europe*, was in an account of its raging in beſieged towns, by the hiſtorian *Olaus Magnus (n)*, where it was attended with ſuch ſymptoms as occur always at ſea. We have likewiſe about the ſame time a very elegant picture of it drawn by *Adrian Junius*, a phyſician and hiſtorian in *Holland (o)*.

Moreover, the ſea-ſcurvy is called by ſeveral authors *the Dutch diſtemper*; eſpecially by the celebrated *Francis Gemelli Careri*, who has wrote the beſt voyages in the *Italian* language. The

(l) Praxis medic. et obſervationes.

(m) Yet elſewhere, *Angli maritimis commerciis dediti, et nautæ potiſſimum, ſtomacace affliguntur. Sive id ſit cereviſiæ potu ex paluſtribus aquis coctæ, ſive ex aëris putredine, cælique nebulis aut vaporibus, hujus noſtri inſtituti explicare non eſt.* Hiſtoria ſtirpium.

(n) Vid. Part 3. chap. 1.

(o) Hollandiæ itaque peculiari dono Natura dedit proventum lætum Britannicæ herbæ (which he afterwards calls *cochlearia*) *quam præſentanei remedii vim præbere in profligandâ ſceletyrbe et ſtomacace experiuntur, cum incolis, exteri quoque: quibus malis dentes labuntur, genuum compages ſolvitur, artus invalidi fiunt, gingivæ putreſcunt, color genuinus et vividus in facie diſperit, liveſcunt crura, ac in tumorem laxum abeunt.* Hiſtor. Bataviæ, cap 15.

French formerly gave it the name of the land evil (*p*). And indeed the ſymptoms of the malady are at this day uniform and the ſame, both at ſea and land; in *Holland* (*q*), *Greenland* (*r*), *Hungary* (*s*), *Cronſtadt* (*t*), *Wiburg* (*u*), *Scotland* (*w*), *&c.* which ſufficiently evinces the abſurdity of the aſſertion advanced by ſeveral authors, that ſince the firſt accounts of it were publiſhed, the face and appearances of the calamity have been greatly changed.

2*dly*, As to the cauſes of this diſeaſe; they are the ſame on both elements: for it will be fully proved (*x*), that there is not to be found any one cauſe productive of it at ſea, which is not alſo to be met with at land; though ſuch cauſes, by ſubſiſting longer and in a higher degree, uſually give riſe to its greater virulence in that element.

It is indeed a ſufficient and juſt confutation of many writers on the ſcurvy, that they pretend to deſcribe a malady to which ſeamen are peculiarly ſubject, and which they ſay proceeds from the *nauticus victus*, putrid water, and ſea-air. Yet their aſſertion, That the diſeaſe deſcribed by them (*viz. Eugalenus* (*y*), *Willis*, and their followers) is

(*p*) Vid. Dellon's voyage *aux Indes orientales*.

(*q*) Vid. Dr. *Pringle*'s obſervations on the diſeaſes of the army, p. 10.

(*r*) Act. Haffnien. vol. 3. obſ. 75. (*s*) *Kramer*.

(*t*) *Sinopæus*. (*u*) *Nitzſch*.

(*w*) Vid. Dr. *Grainger*'s ingenious account of the ſcurvy at *Fort-William*, part 2. chap. 2.

(*x*) Part 2. chap. 1.

(*y*) *Eugalenus* practiſed at *Embden*, and other places of *Eaſt-Frieſland*; where the cold, thick, and moiſt air, the raw unwholſome waters uſed by the inhabitants along that tract of the ſea-coaſt, and the *craſſus et nauticus victus* (as he terms it) occaſioned the ſcurvy to be an univerſal diſeaſe. But it muſt be

is properly a marine diſeaſe, is refuted by the obſervation of all practitioners at ſea. And the ſame may be ſaid of the different ſpecies of ſcurvies alledged by *Boerhaave* to proceed from the cauſes above-mentioned.

But a heavier charge lies againſt them. When the true ſcurvy does really occur, their writings, ſo far from being uſeful, are rather hurtful to practitioners; which I think needs no farther proof, than *Kramer*'s letter to the college of phyſicians at *Vienna*. Their doctrines have perverted the judgment of even ſome of the beſt writers,

be granted, that the ſcurvy never was ſo epidemic or fatal there as in ſhips and fleets. All the cauſes he aſſigns as productive of it, do ſubſiſt at times in a much higher degree at ſea than at land. I have had 80 patients out of the number of 350 men afflicted with it; and have ſeen a thouſand ſcorbutic perſons together in an hoſpital, but never obſerved one of them to have the diſeaſes deſcribed by *Eugalenus*. Nor did I ever hear of a practitioner at ſea, where it would have been moſt allowable, who aſſumed his principles; and ſuppoſed, that almoſt all diſeaſes there muſt be complicated with the ſcorbutic *virus*; that the moſt extraordinary and uncommon which occured at ſea (as was ſuppoſed at *Embden* and *Hamburg*) were, this miſchief lurking under deceitful appearances; and that ſuch diſeaſes could not be cured without a mixture of antiſcorbutics, which ſeldom failed to remove them. This laſt, ſurely, could never have eſcaped the obſervation of our many ingenious navy-ſurgeons, and of our phyſicians and ſurgeons to naval hoſpitals; ſome of whom had ſeldom leſs than a thouſand patients from the ſea. Mr. *Ives*'s ingenious journal (placed at the end of chap. 1. part 2.) is a proof of the variety of diſeaſes which occur there, without the leaſt connection with the ſcurvy. If it often killed the patient (as it would ſeem always to have done in *Frieſland*) before the gums and legs were affected, or the ſpots appeared; this likewiſe muſt have eſcaped our obſervation. But though *Eugalenus* may be juſtly condemned as the parent of theſe abſurdities, greater miſchief, however, has been done by ſucceeding authors, from their digeſting them into a ſyſtem. Such remedies and cures have been directed, as are not only altogether unſerviceable, but for the moſt part highly pernicious.

I ſhall inſtance only in *Sinopæus*. That author has taken his deſcription of the diſeaſe from nature and obſervation; but unluckily, his medicines from thoſe authors; otherwiſe I am morally certain, the calamity would not have ariſen to the height it did at *Cronſtadt*, and uſually does every ſpring; where it ſeems to be abated annually more by change of weather, than the ſkill of phyſicians.

3dly, The cure of ſcorbutic diſeaſes contracted either at land or ſea, is entirely the ſame. This will appear to any perſon who peruſes *Backſtrom*'s and *Kramer*'s obſervations, and ſeveral other hiſtories related in this treatiſe. And every practitioner who has treated ſuch caſes, muſt be further convinced of it; as the firſt remedies which were caſually found out by the vulgar, and are recommended by the firſt and purer writers on the ſubject, have preſerved their reputation and eſteemed virtues even to this day.

Laſtly, If to ſuch convincing proofs it may be neceſſary to add authority, I ſhall beg leave to quote a very great one. The learned Dr. *Mead*(*z*) informs us, that incited by the extraordinary events publiſhed in Lord *Anſon*'s voyage, to make a full inquiry into this whole affair, he had not only the honour of diſcourſing with his Lordſhip upon it, but had alſo been favoured with the original obſervations of his ingenious and ſkilful ſurgeons; and, upon the whole, he found, that this diſeaſe at ſea was the ſame with the ſcurvy at land; the difference being only in the degree of malignity.

If objectors ſhould reply, That tho' the ſea-ſcurvy often occurs at land, and, as has been demonſtratively proved, is the only diſeaſe that

(*z*) Diſcourſe upon the ſcurvy, p. 97.

was

was deſcribed by the firſt writers on the ſubject, as a malady peculiar to the marſhy and cold countries which they inhabited; yet that they, nevertheleſs, underſtand by what may be termed, in contradiſtinction to the other, a *land-ſcurvy*, a diſeaſe, or claſs of diſeaſes, different from the appearance of the marſh or marine ſcurvy: then it is incumbent upon them, and would be much for the benefit of mankind, to define, deſcribe, and characteriſe this ſingular ſpecies, and diſtinguiſh it from the appearances of the ſaid diſeaſe, either at land or ſea. This they muſt know has not been attempted by any author in phyſic. The greateſt modern writers, *viz. Boerhaave*, *Hoffman*, and *Pitcairn*, have made no ſuch diſtinction, either in the cauſes or diagnoſtics of the diſeaſe, nor indeed in any part of their deſcription of it. And I mention theſe laſt, as having had a very extenſive practice, beſides the advantage of peruſing all books wrote before them on the ſubject.

It may be ſaid, That there are certain diſorders, *viz.* many cutaneous eruptions, ulcers, a ſpecies of tooth-ach, *&c.* which, for a conſiderable time, have paſſed under the character and denomination of *ſcorbutic*; a term introduced by our predeceſſors in the ſcience, and which moſt practitioners have agreed to make uſe of at this day, and which there may perhaps be a neceſſity of retaining, as it is not eaſy to aſſign a proper appellation to every diſeaſe, or caſe of a patient.

This reaſon is commonly urged. In anſwer to which I ſhall, *firſt*, inquire, how or when this term came firſt to be ſo generally applied, or whence ſuch ulcers, the itch, *&c.* were denominated *ſcorbutic?* I think it will admit of no doubt, that it was firſt applied to ſuch ulcers and

eruptions on the ſkin as did not readily yield to the ſkill of the practitioner *(a)*. Dr. *Muſgrave (b)* informs us, that all *Europe* was ſo much alarmed with the apprehenſions of this evil in the laſt century, as appears from the *Recipe*'s of practitioners in thoſe times, that the whole art of phyſic ſeems to have been employed in grappling with this univerſal calamity, which was ſuppoſed to mingle its malignity with all other diſeaſes whatever *(c)*. Thus the term was originally impoſed through ignorance, and a miſtaken opinion of the prevalence of the ſcurvy. There would indeed be ſome difficulty in conceiving how men of ſuch wild fancies, as were they who have been deemed the principal authors on the ſcurvy, and to whom we are indebted for this general name, could ever get into poſſeſſion of that degree of fame which they have acquired, did we not experience how much the world is diſpoſed to admire whatever ſurpriſes; as if we were endued with faculties to ſee through ordinary follies, while great abſurdities ſtrike with an aſtoniſhment which overcomes the powers of reaſon, and makes improbability even an additional motive to belief. There are few now who ſet ſo ſmall a value upon their time, as to read theſe authors; and by that means their merit is little examined into, and is admitted upon the credit of others.

2*dly*, If it be urged, That the denomination of ſuch diſeaſes ought ſtill to be retained, as being now generally adopted; I anſwer, That, upon the ſame principles, the moſt ridiculous terms in any art may be vindicated. Lord *Veru-*

(a) Vid. Sydenham.
(b) De arthritide ſymptomatica, p. 98.
(c) Vid. note, p. 30.

lam,

lam, and the firſt reformers of learning in *Europe*, met with this very objection. The learned ignorance of that age lay concealed under a veil of unmeaning, unintelligible jargon. But, in order to make way for the reſtoration of ſolid learning, it was found neceſſary to expunge all ſuch terms as were contrived to give an air of wiſdom to the imperfections of knowledge.

It may be believed, that there are few people who have had opportunities of reading more upon this ſubject than I have done; and that there are few books or obſervations publiſhed upon the diſeaſe, that have not fallen under my inſpection. If I could, with any manner of propriety, have characteriſed any other ſpecies of ſcurvy than that which is the ſubject of this treatiſe, I ſhould have conſulted the ſecurity of my character more, than in advancing an uncommon doctrine, as all novelties are expoſed to oppoſition. But, in attempting a thing of that ſort, I did not find two authors agree who founded their doctrine upon facts and obſervations. I obſerved, that ten different practitioners pronounced ten caſes to be ſcorbutic, which, upon examination, did not bear the leaſt reſemblance or analogy to each other. Upon this occaſion, I might have followed the example of ſome writers; and, diſliking the former diſtinctions made, might have introduced others, accommodated either to the opinion of the country, and thus, by adopting vulgar errors, have endeavoured to eſtabliſh and confirm them; or to ſome new principles; and ſo might have multiplied abſurdities, in like manner as any private practitioner does, who thinks he has a right to term what he pleaſes a *ſcurvy*; though the propriety of the appellation cannot be juſtified from the acceptation

tion of it, by the moſt authentic authors of facts and obſervations, nor has any foundation in the genuine principles of phyſic.

It may be ſaid, That the world would reap great advantage by having a compleat treatiſe of the cauſes, cure, *&c.* of the many diſeaſes which commonly go under the denomination of the *ſcurvy*. But this is not an eaſy taſk: and it might as well be expected, that an author, who lived in a country, or at a time, when the moſt obſtinate and uncommon appearances were aſcribed to witchcraft, and had taken pains to baniſh ſuch ignorant conceits, ſhould be able to account for the various diſtempers and *phænomena* aſcribed to that imaginary evil. It has been uſual for ignorant and indolent practitioners, to refer ſuch caſes as they did not underſtand, or could not explain, to one or other of theſe cauſes; according to the obſervation of a very learned and late practitioner *(d)*.

With regard to the neceſſity of retaining the name, as if an unmeaning term was as requiſite in phyſic, as pious frauds in certain religions: *Si vulgus vult decipi, decipiatur.* If the good of mankind will have no effect upon theſe gentlemen, I am afraid no other argument will. We ſhall however lay before them a view of the fatal effects produced by the uſe of ſuch vague and indefinite terms.

(d) Mos adeò invaluit, ut hodie medici imperitiores, ſi quando ex certis ſignis neque morbum neç cauſam ejus ritè poſſunt cognoſcere, ſtatim ſcorbutum prætendant, et pro cauſa ſcorbuticam acrimoniam accuſent. Deinceps non rarò accidit, ut adfectus quidam ſæpe planè ſingularis, cui portentoſa ſpaſtico-convulſiva junguntur ſymptomata, in artis exercitio occurrat; et tum uſu receptum eſt, ut illam vel ad faſcinum vel ad malum ſcorbuticum rejiciant. Fred. Hoffman. med. ſyſtemat. tom. 4. p. 369.

1ſt,

1*ſt*, On young practitioners in phyſic; who being provided with ſuch a general name as that of the *ſcurvy*, comprehending almoſt all diſeaſes, think themſelves at once acquainted with the whole art of medicine; as they may be furniſhed with numerous cures for it from the many Pharmacopœias with which the preſent age abounds. Hence a variety of caſes are every day vulgarly deemed and erroneouſly treated as ſcorbutic.

2*dly*, Older practitioners, by referring many various and uncommon diſeaſes to ſuch imaginary cauſes *(e)*, deprive the world of the true improvement of their art: which can only be expected from accurate hiſtories of different caſes, faithfully and honeſtly ſtated; and diſtinguiſhed from each other, with the ſame accuracy that botanical writers have obſerved in deſcribing different plants. The antients have been at great pains to diſtinguiſh the diſeaſes of the ſkin, which at this day make up a very numerous and conſiderable claſs, and have indeed treated that ſubject with prolixity. But the moderns have claſſed almoſt all of them under that one very improper denomination of the *ſcurvy (f)*, even from the

(e) Notandum eſt, quòd quando multa ſymptomata numerantur, tunc eſſe cogitandum de nomine congeriem morborum indicante, ut ſcorbutus. Waldſchmid praxis medicinæ rationalis.

(f) The learned Dr. *Pringle* very juſtly obſerves the impropriety of the appellation of *ſcurvy* generally given to the itch, various kinds of *impetigo*, *&c.* and remarks, that in the marſhy parts of the *Low Countries*, where the true ſcurvy is moſt frequent, and of the worſt kind, the itch is a diſtemper unknown. A real ſcurvy, ſays he, imports a flow, but general reſolution or putrefaction of the whole frame; whereas the *ſcabies*, *impetigo*, or leproſy, will be found to affect thoſe of a very different conſtitution. The true ſcorbutic ſpots are of a livid colour, not commonly ſcurfy, or raiſed above

the higheſt degree of the leprous evil, to the itch and common tetters; and with theſe have confounded the pimpled face, ſcall head, moſt cutaneous eruptions uſual in the ſpring, the eryſipelas, *&c.* nay, dyſepulotic ulcers, eſpecially on the legs, and various other ailments of the moſt oppoſite genius to the true ſcurvy, have been ſuppoſed to proceed from it. The different cauſes of which various diſtempers cannot be with propriety reduced under any diviſion of the ſcurvy as yet made, nor from thence the peculiar and diſtinct genius of each known and aſcertained; which, however, is abſolutely neceſſary towards undertaking their cure.

3*dly*, and *laſtly*, It has a moſt fatal influence on the practice. Thus the original and real diſeaſe has been loſt and confounded amidſt ſuch indefinite diſtinctions and diviſions of it, that it is ſometimes not known by the beſt practitioners, when it really occurs. *To this was owing the loſs of ſo many thouſand* Germans *in* Hungary (*g*), *not many years ago*; *where the phyſicians to that army, together with the whole learned college of phyſicians at* Vienna, *aſſiſted by all the books extant on the ſubject, were at a loſs how to remedy this dreadful calamity*. And for this reaſon many unhappy people are daily injudiciouſly treated at land, as muſt have been obſerved by every one acquainted with the diſtemper. Thence likewiſe pernicious methods have been recommended at ſea, and too often put in practice.

above the ſkin, *&c.* Vid. chapter on the itch, in Obſervations on the diſeaſes of the army.

In his Appendix he obſerves, that the muriatic and putrid ſcurvy are properly the ſame thing, and that the ſuppoſed ſpecies of acid ſcurvy is at leaſt very improperly denominated.

(*g*) Vid. *Krameri epiſtolam de ſcorbuto.*

CHAP.

CHAP. IV.

Of the ſcurvy being connate, hereditary, and infectious.

VArious have been the opinions concerning the cauſes and propagation of this evil. Some believed it to be connate, and the dreadful ſeeds of it tranſmitted from ſcorbutic parents, and that ſometimes it was derived from a ſcorbutic nurſe.

Horſtius (a) had ſo very accurate a diſcernment, as to find, that the grandfather might infect the grandchild, though his own ſon eſcaped the infection. He aſcribes the ſpreading of the contagion in *Holland*, to the cuſtom of ſalutation by kiſſing; and pities the poor infants, whom every perſon muſt ſalute, to avoid giving offence to the family. He is not at all ſurpriſed, that the calamity was ſo frequent in the *Hanſe Towns*, and in the *Lower Saxony*, as they uſed but one cup at table; where there was rarely wanting ſome ſcorbutic perſon with rotten gums, who with his *ſaliva* might infect the whole company. *Sennertus* aſſerts it to be infectious from venereal embraces, and mentions an inſtance of its being communicated even from a dead body. *Boerhaave*, *Hoffman*, and almoſt all authors, make it a very infectious poiſon; and *Charleton* was of opinion, that more got it in this way than in any other.

Several of theſe chimerical opinions deſerve no ſerious confutation. It is indeed far from being probable, that this is what may probably be

(a) *Tractatus de ſcorbuto.*

called

called a hereditary or connate diſeaſe; as we ſeldom in practice ſee it riſe to a great height, without the influence of ſome obvious external cauſes; and experience ſhews, that when the taint is but ſlight and beginning, it may for the moſt part be quickly and eaſily ſubdued.

It is a matter of more conſequence, to be rightly informed whether it is really contagious, as hath been confidently aſſerted by moſt authors. The effect of contagious poiſons can only be known *à poſteriori*, and by no reaſon deduced *à priori*. So that theſe authors ſhould have given us atteſted hiſtories of perſons infected in this manner, where the other cauſes that always produce the diſeaſe had no influence. But no ſuch hiſtories are to be found. On the contrary, where-ever the calamity has been general, it was known to proceed from ſtrong and univerſal cauſes; and, in the times of its moſt epidemical ravage, perſons properly guarded againſt the influence of theſe cauſes, were not infected with it. Thus, when it lately raged with ſuch a remarkable devaſtation among the *Germans* in *Hungary*, the phyſician to that army *(b)* was ſurpriſed to find that not one officer, even the moſt ſubaltern, received the infection.

At ſea likewiſe, where the frequency of the diſtemper gives the greateſt opportunities of determining this point, it never has been deemed infectious. If it had been ſo, it could not there have eſcaped obſervation. Taught by fatal experience, the ſpeedy progreſs and great havock that all contagious diſtempers, *viz.* fevers, dyſenteries, *&c.* make among a number of men ſo cloſely confined, it is common to uſe many precautions to prevent their ſpreading. They ſepa-

(b) Kramer.

rate the diſeaſed from the reſt of the crew, deſtroy the bedding and cloaths of thoſe who die, ſend immediately on ſhore patients afflicted with ſuch diſeaſes upon coming into port, and afterwards ſmoak and clean the ſhip. But long and conſtant experience having ſufficiently convinced them, that ſcorbutic ailments are not infectious, no ſuch precautions are ever taken. In ſlight caſes, and even where the gums are very putrid, the men are often kept on board, and cured; there being no inſtance of ſuch perſons ever infecting the reſt of the crew, or of thoſe who are ſent on ſhore carrying the infection into the hoſpitals; though, upon many other occaſions, the patients in theſe hoſpitals ſuffer extremely by contagious diſeaſes introduced amongſt them.

In an epidemic ſcurvy at ſea, the indiſpoſition attacks, in a regular order, ſuch people as are prediſpoſed to it by manifeſt cauſes. It is for a long time confined at firſt to the common ſeamen: and though the officers ſervants are at ſuch times often afflicted with it, while uſing the ſame cups and diſhes with their maſters; yet it is but rare to ſee this diſeaſe in even a petty officer.

I could produce many inſtances, and well atteſted facts, which prove beyond all doubt, that drinking out of the ſame cup, lying in the ſame bed, and the cloſeſt contact, does not communicate this diſtemper. But to multiply proofs of a thing ſo univerſally known, is needleſs. Perhaps the following may ſuffice. A *French* priſoner was taken on board his Majeſty's ſhip *Saliſbury* from a prize-veſſel, with the moſt putrid ſcorbutic gums that I ever obſerved. The ſtench and putrefaction of his mouth were indeed intolerable, even at ſome diſtance. Yet though

though he eat and drank out of the ſame diſh and cup with five of his companions for a fortnight, he did not infect one of them: they all arrived in harbour in perfect health.

Nor is this diſeaſe communicated by infection from thoſe that die: for the diſſections made at *Paris* (*c*), of the moſt putrid ſcorbutic bodies, do not appear to have produced any ſuch effect.

From whence we may judge how much authors have been miſtaken, when they imagined this dreadful calamity to have diffuſed itſelf by contagion over the whole world, after it had quitted its native ſeat in the cold northern climates.

(*c*) Vid. *Memoires de l' academie des ſciences* 1699. p. 737.

A TREATISE OF THE SCURVY.

PART II.

CHAP. I.

The true cauſes of the diſeaſe, from obſervations made upon it, both at ſea and land.

THE ſcorbutic taint is induced chiefly by the agency of certain external and remote cauſes; which, according as their exiſtence is permanent or caſual, and in proportion to the different degrees of violence with which they act, give riſe to a diſeaſe more or leſs epidemic, and of various degrees of malignity.

Thus, where the cauſes productive of it are general, and violent in a high degree, it becomes an epidemic or univerſal calamity, and rages with great and diffuſive virulence: as happens often to ſeamen in long voyages; ſome-

ſometimes to armies *(a)*, very lately to the *German* ſoldiers in *Hungary (b)*; frequently to troops when cloſely beſieged, as to the *Saxon* garriſon in *Thorn (c)*, the beſieged in *Breda (d)* in *Rochelle*, as alſo *Stetin (e)*: and at other times to whole countries; as in *Brabant*, in the year 1556 *(f)*; and in *Holland*, *ann.* 1562 *(g)*.

2*dly*, Where theſe cauſes are fixed and permanent, or almoſt always ſubſiſting, it may be there ſaid to be an endemic or conſtant diſeaſe; as in *Iceland*, *Groenland (h)*, *Cronſtadt (i)*, the northern parts of *Ruſſia (k)*, and in moſt northern countries as yet diſcovered in *Europe*, from the latitude of 60 to the north pole. It was alſo formerly in a peculiar manner endemic in ſeveral parts of the *Low Countries*, in *Holland* and *Frieſland*; in *Brabant*, *Pomerania*, and the *Lower Saxony (l)*; and in ſome places of *Denmark (m)*, *Sweden*, and *Norway (n)*, chiefly upon the ſea-coaſts.

Laſtly, Where theſe cauſes prevail leſs frequently, and are more peculiar to the circumſtances of a few, it may be there ſaid to be ſporadic, or a diſeaſe only here and there to

(a) Vid. *Nitzſch.* *(b)* Vid. *Kramer.*
(c) *Bachſtrom.* *(d)* *Vander Mye.*
(e) *Krameri epiſtol.* p. 23. *(f)* *Dodonæus, & Forreſtus.*
(g) *Ronſſeus.* *(h)* *Herman. Nicolai. Vid. act. Haffn.*
(i) *Sinopæus.*
(k) Vid. *Commerc. literar. Norimb. an.* 1734. p. 162.
(l) *Wierus, Ronſſeus, &c.*
(m) Vid. *Concilium facultatis medicæ Haffn. de ſcorbuto.*
(n) *Brucæus.*

be

be met with; as in *Great Britain (o)* and *Ireland*, ſeveral parts of *Germany*, &c.

Now, by conſidering the peculiarity of the circumſtances, ſituation, and way of life of theſe people; and by attentively obſerving, what at any time gives riſe to this diſeaſe, what is ſeen to remove it, and what to increaſe or mitigate its malignity, we ſhall be able to form a judgment, not only of the principal cauſes productive of it, but likewiſe of the ſubordinate, or thoſe that in a leſs degree may contribute their influence. It is indeed a matter of the utmoſt conſequence, to inveſtigate the true ſources of this evil; as, upon the removing or correcting of theſe, the preſervation of the body from its firſt attacks, as well as its conſequences, in a great meaſure depends. And we ſhall begin with conſidering the ſituation of thoſe at ſea, among whom it is ſo often an epidemic calamity.

In the proof of the identity of this diſeaſe on both elements *(p)*, I obſerved that the cauſes productive of it at ſea, were to be found alſo at land, in a ſmaller degree: but before determining what are the true cauſes of its being ſo often epidemic at ſea, it may not be amiſs to remark what thay are not, although commonly accuſed.

(o) Vid. Dr. *Grainger's* account of the ſcurvy at *Fort-William.*

(p) Part 1. chap. 3.

Many (q) have aſcribed this diſeaſe to the great quantity of ſea-ſalt, neceſſarily made uſe of by ſeamen in their diet: and it has been therefore denominated a *muriatic ſcurvy*.

Whether this ſalt, inſtead of producing the ſcurvy, may not, on the contrary, from its antiſeptic quality, become the means of preventing it for ſome time, I ſhall not take upon me to determine, as my experiments do not authoriſe this concluſion; though they plainly prove, that it neither cauſes the diſtemper, nor adds to its malignity. For in the cruiſes after mentioned, where the ſcurvy raged with great violence, it was then a faſhionable cuſtom to drink the ſalt-water, by way of gentle phyſic. I have been told, that Admiral *Martin*, and ſeveral officers in his fleet, continued the uſe of it during a whole cruiſe. I had at that time ſeveral patients under a purging courſe of this water, for the itch, and obſtinate ulcers on their legs; and have experienced very good effects from it, eſpecially in the laſt caſe: yet none of theſe people, after continuing this courſe for a month, had the leaſt ſcorbutic complaint.

But to put it beyond all doubt, that ſea-ſalt is not the occaſion of the ſcurvy, I took two patients (in order to make trial of the effects of different medicines in this diſeaſe, to be more fully related afterwards) with very putrid gums, ſwelled legs, and contract-

(q) *Liſter. exercitatio de ſcorbuto. Vanſwitten. Comment. in aph. Boerh.* 1153, *&c.*

ed

ed knees, to whom I gave half a pint of ſalt-water, and ſometimes more, every day for a fortnight: at the expiration of which time, I was not ſenſible of their being in the leaſt worſe; but found them in the ſame condition as thoſe who had taken no medicine whatever *(r)*. From which I am convinced, that ſea-ſalt, at leaſt the drinking of ſalt-water, by no means diſpoſes the conſtitution to this diſeaſe.

But I would not be underſtood here to mean, nor does it follow from what has been ſaid, that although ſea-water, which is a compoſition in which this ſalt is a principal ingredient, has no bad influence upon the ſcurvy, that a diet of ſalt fleſh and fiſh is equally innocent. The contrary of which will appear in the ſequel. The brine of meats, in particular, is of a different quality from either purified ſea-ſalt or ſalt-water; for we find that this ſalt may be ſo intangled by the animal oils, eſpecially in ſalt pork, that it is with great difficulty diſengaged from them after many waſhings, and the moſt plentiful dilution. So that as this ſaline quality is inextricable from ſuch food, it is rendered improper in many caſes to afford that ſoft, mild nouriſhment, which is required to repair the body. It is remarkable, that the powers of the human machine can animaliſe

(r) This experiment, of giving ſcorbutic people ſalt-water, has been often tried; and ſome have thought they received benefit from it. See chap. 4.

other ſalts; that is, convert them into the ammoniacal ſort, or that of its own nature: while this ſea-ſalt ſeems to elude the force of our ſolids and fluids; and retaining its own unchangeable nature in the body, is to be recovered unaltered from the urine of thoſe who have taken it. Thus, ſea-ſalt has no effect in producing this diſeaſe; whatever meats hardened and preſerved by it may have, by being rendered of hard and difficult digeſtion, and improper for nouriſhment. And this is farther confirmed by the daily experience of ſeamen; who, upon the firſt ſcorbutical complaint, are generally debarred the uſe of every thing that is the leaſt ſalted: notwithſtanding which, the diſeaſe increaſes with great violence: while at other times, it breaks out when there is plenty of freſh fleſh-proviſions on board; as was the caſe in Lord *Anſon*'s ſhips, on their leaving the coaſt of *Mexico* (1). Nor have the ſaline *effluvia* from that element an effect to produce this diſeaſe; as there are few workmen in any buſineſs ſo healthy, as thoſe who make ſea-ſalt from the

(1) Vid. Part 3. chap. 2. Dr. *Mead*, who was thoroughly acquainted with their ſituation, obſerves, that, upon that occaſion, freſh fleſh-proviſions, and plenty of wholeſome rain-water, did not at all avail them. *Diſcourſe on the ſcurvy*, p. 100.

That ſalt fleſh-meats have ſometimes no ſhare in occaſioning this diſeaſe, is demonſtrable from the many *Germans* in *Hungary* deſtroyed by it, who eat neither ſalt beef nor pork; on the contrary, they had freſh beef at a very low price. *Vid. Krameri epiſt.* p. 33.

The ſoldiers in the *Ruſſian* armies alſo had no ſalt proviſions. *Vid. Nitzſch.*

ſea-water, and are continually expoſed to the warm vapour in drying and purifying that ſalt. It has alſo been obſerved, that thoſe who work night and day in the ſalt-pits in *Poland*, and who even live in them, are not in the leaſt ſubject to the ſcurvy; on the contrary, they are remarkable for the health and vigour of their conſtitutions *(t)*.

Others, again, have ſuppoſed ſuch to be the conſtitution of the human body, that health and life cannot be preſerved long, without the uſe of green herbage, vegetables and fruits; and that a long abſtinence from theſe, is alone the cauſe of the diſeaſe *(u)*.

But if this were truly the caſe, we muſt have had the ſcurvy very accurately deſcribed by the antients; whoſe chief ſtudy ſeems to have been the art of war; and whoſe manner of beſieging towns was generally by a blockade, till they had forced a ſurrender by famine. Now, as they held out many months, ſometimes years, without a ſupply of vegetables: we ſhould, no doubt, have heard of many dying of the ſcurvy, long before the magazines of dry proviſions were exhauſted. The continuance of thoſe ſieges far exceeded moſt of our modern ones; even the five months blockade of *Thorn*, upon which *Bachſtrom* has founded this ſuppoſition. It would likewiſe be a much more frequent diſeaſe in

(t) Vid. *Hoffman*, tom. 3. cap. 9. p. 57. *De efficacia acutilitate ſalis communis, &c.*

(u) Obſervationes circa ſcorbutum; auctore Fre Bachſtrom.

every country, than it really is: for there are perſons every where, who, from choice, eat few or no green vegetables; and ſome countries are deprived of the uſe of them for five or ſix months of the year; as is the caſe of many parts in the highlands of *Scotland*, *Newfoundland*, &c. where, however, the ſcurvy is not a uſual malady.

It would be tedious to give many inſtances, they being notorious, of ſhips crews continuing ſeveral months at ſea, upon their ordinary diet, without any approach of the ſcurvy. I have been three months on a cruiſe, during which time none of the ſeamen taſted vegetables or greens of any ſort; and although for a great part of that time, from want of freſh water, their beef and pork were boiled in the ſea-water, yet we returned into port without one ſcorbutic complaint. I have known meſſes, as they are called, of ſeamen, who have lived, during a whole voyage of three years, on the ſhip's proviſions, for want of money to purchaſe better fare, eſpecially greens; and who were ſo regardleſs of health, as to expend what little money they could procure, in brandy and ſpirits: ſo that a few onions, or the like, was their whole ſea-ſtore; and a meal of vegetables was ſeldom eaten by them, above twice or thrice in a month, during the whole voyage: notwithſtanding which, they have kept free from the ſcurvy.

But it was remarkable, in the two cruiſes afterwards to be mentioned, in his Majeſty's

ſhip

ſhip the *Saliſbury*, where I had an opportunity of making obſervations on this diſeaſe, that it began to rage on board that ſhip, and indeed all the *Channel* ſquadron, upon being leſs than ſix weeks at ſea; and after having left *Plymouth*, where plenty of all ſorts of greens were to be had; by which, as one would have thought, the ſailors had ſufficiently prepared their bodies againſt the attack of this malady. Yet here, in ſo ſhort a time as two months, out of 4000 men in that fleet, 400 at leaſt became more highly ſcorbutic (*w*), than could reaſonably have been expected, had they all been debarred the uſe of vegetables for ſix months on ſhore, like our highlanders, and many others. And what puts it beyond all doubt, that the diſeaſe was not occaſioned ſolely by the want of vegetables for ſo ſhort a time, is, that the ſame ſhip's company of the *Saliſbury*, in much longer cruiſes, kept quite free from the diſtemper, where their circumſtances as to want

(*w*) Upon the return of the fleet to *Plymouth*, Dr. *Huxham* makes the following remark in the month of *July* 1746. *Terribilis jam ſævit ſcorbutus inter nautas, præcipuè quos ſecum reduxit Martin, claſſis occidentalis præfectus. Excruciantur perplurimi ulceribus fœdis, lividis, ſordidis, ac vulvæ fungoſis: initium eſt profectò et inſolitum, quàm brevi tempore ſpongioſa caro, fungi ad inſtar, his ulceribus ſuccreſcit, etſi paulò antè ſcalpello deraſa, eaque interdum ad magnitudinem enormem. Non ſolum miſeris his, at verè utilibus hominibus, per ſe infenſa eſt maximè ſcorbuticà lues, ſed et illos etiam omni pene morbo, qui ab humorum corruptione pendet, obnoxios admodum reddit; febribus nempe putridis, malignis, petechialibus, peſſimo variolarum genere, dyſenteriæ cruentæ, hæmorrhagiis, &c. Multo magis adeò homis his fuit exitio quàm bellicum fulmen!* Obſervationes de aere et morbis epidemicis.

of freſh vegetables were ſimilar. It was obſervable, that in the longeſt cruiſe ſhe made, while I was ſurgeon, there was but one ſcorbutical patient on board, who fell into the diſeaſe after having had an intermitting fever. We were out at that time from the 10th of *Auguſt* to the 28th of *October*; which was a twelve weeks continuance at ſea, and conſequently as long an abſtinence from vegetables.

So that although it is a certain and experienced truth, that the uſe of greens and vegetables is effectual in preventing the diſeaſe, and extremely beneficial in the cure; and thus we ſhall ſay, that abſtinance from them, in certain circumſtances, proves the *occaſional cauſe* of the evil: yet there are unqueſtionably to be found at ſea, other ſtrong ſources of it; which with reſpect to the former (or want of vegetables) we ſhall hereafter diſtinguiſh by the name of the *prediſpoſing cauſe* to it. The influences of which latter, at times, muſt be extremely great, as in the caſe of Lord *Anſon*'s ſquadron in paſſing round *Cape Horn* (x), to induce ſo univerſal a calamity; from which hardly any one of them ſeems to have been exempted, attended with the mortality of above one half, when they had been but little more than three months at ſea: while whole countries are obſerved to live on the ſame, nay, even a leſs wholeſome diet; and many people for years

(x) Vid. Part 3. chap. 2.

abſtain from vegetables, without almoſt any inconveniency.

Some have alledged this to proceed from ſomething peculiar in the confined and polluted air of a ſhip; and the ſtagnation of the bilge-water in the hold has been accuſed as a main cauſe of the diſtreſs. But had this laſt the effects preſumed, they would be moſt ſenſibly felt by thoſe who are moſt expoſed to it, *viz.* the carpenters; who at ſea are often obliged to meaſure, every four hours, the quantity of bilge-water; and do then, and at other times in mending the pumps, ſuffer very great inconveniencies, being almoſt ſuffocated by it: many inſtances are not wanting where they have been killed at once with this noxious vapour, to which they lie the neareſt when in bed. Yet it does not appear from my own experience, nor from the accounts which I have been able to collect, that they are more liable to the ſcurvy than others on board.

As to any other inconveniencies from filth, or want of cleanlineſs, in a cloſe place, and where the cutaneous and pulmonary perſpiration of a multitude is pent up and confined; they are not peculiar to ſhips, but common to all crouded jails, hoſpitals, &c. and whatever bad effects ſuch a vitiated air may have on this diſeaſe, yet it is certain the ſcurvy is not the uſual and natural conſequence of it. This is the more particularly to be noted, in order to determine the genuine effects of this peculiar

liar evil diſpoſition of air; which are at all times, and in all places, a malignant, highly-contagious fever, known by the name of *the jail-diſtemper*. This is almoſt the only diſeaſe obſerved in the tranſport-ſhips which daily carry over numbers of people to *Virginia*, few or none of whom become ſcorbutic; as likewiſe in ſhips that have been crouded with ſoldiers. And whenever many perſons are confined together long under cloſe-ſhut hatches, they will at length contract this fever, without any approach of the ſcurvy amongſt them; unleſs, as may ſometimes be the caſe, the body, weakened and exhauſted by the preceding ſickneſs, is afterwards rendered more ſuſceptible of the ſcorbutic taint, where other ſcorbutic cauſes prevail. Though I have oftentimes had occaſion to ſee this contagion bred by putrid air, yet I never obſerved any ſcurvies, either at the time or after it.

In the latter end of the year 1750, the government contracted with a *Dutch* maſter of a veſſel to carry over 200 *Palatines* to our colony in *Nova Scotia*. The cruel *Dutchman*, contrary to expreſs orders, confined theſe poor people below, and would not permit them to come ſo often upon deck as was requiſite for their health; by which means they contracted this malignant fever, which killed one half of them. And here it was remarkable, there was not one of theſe people who, after recovering at ſea, or upon land,

became

became ſcorbutic; nor had they any ſuch diſtemper in the ſhip (y).

The truth really is, a putrid air, though never obſerved ſolely to be productive of this diſeaſe, has a pernicious influence in aggravating its ſeveral ſymptoms; and where an epidemic ſcorbutical conſtitution at the ſame time ſubſiſts, they give riſe to a complicated, ſcorbutical and malignant fever; which I ſhall have occaſion to mention among the ſymptoms of this malady.

But the ſcurvy by itſelf is often experienced to make great ravage, where the air has been properly renewed and ventilated, and the whole ſhip kept clean and ſweet. I have been told, that the *Namur*'s crew, in their expedition to the *Eaſt-Indies*, though very

(y) Communicated by Mr. *Ives*. This contagious petechial fever was as a plague to the ſhip *Dragon*, of 60 guns, and 400 men, for the ſpace of ſix months. During which time I ſeldom or never had in my liſt leſs than ſixty or ſeventy patients. Many of them relapſed to the third and fourth time. It was a dreadful, painful ſcene! Not a fifth part of our people eſcaped. My firſt mate, Mr. *Bliſcow*, ſoon died in it. Another gentleman, whom our neceſſities obliged the Commodore to warrant as mate from another ſhip, died alſo. My other mate, Mr. *Thomas Peck*, (preſent ſurgeon to the ſick and wounded at *Deal*) narrowly eſcaped with life. To theſe loſſes I muſt add my own dear brother, who commanded the ſoldiers on board, ſeveral gentlemen of the quarter-deck, and ſixty of our ſtouteſt and beſt ſailors. Yet, amidſt all this danger, through the providence of God, I eſcaped untouched, to the ſurpriſe of all who knew our circumſtances, and the fatigue I underwent, when for moſt part deſtitute of all aſſiſtance. But I have not ſeen one inſtance of this illneſs having been complicated with the ſcurvy, or of the ſcurvy ſeizing a man recovered from that fever for at leaſt ſix months afterwards; which was indeed one of the longeſt intervals we ever enjoyed freedom from it.

healthy

healthy at the Cape of *Good Hope*, became ſcorbutic at the time they arrived at *Fort St. David*'s, notwithſtanding the uſe of *Sutton*'s machine *(z)*. And though Lord *Anſon*'s ſhip was kept uncommonly clean and ſweet after they left the coaſt of *Mexico*; yet the progreſs of their miſery was not at all retarded by it. And, what is further pretty remarkable, we know, that the ſcurvy may be perfectly cured in the impure air of a ſhip; of which the following is a memorable inſtance.

His Majeſty's ſhip the *Guernſey* brought into *Liſbon*, after a cruiſe off *Cadiz*, 70 of her crew afflicted with this diſeaſe. Many of them were far advanced, even in the laſt ſtages of it. The plague at this time raging at *Meſſina*, it was with great difficulty our ſhips could obtain *pratique* in any port: ſo that it was found impracticable to land them. There was another very troubleſome circum-

(z) When accounts were received from that great and experienced officer Admiral *Boſcawen*, of the general healthfulneſs of his ſquadron at the Cape, it was with great reaſon aſcribed to the benefit derived from theſe uſeful pipes; though their preſervation from the ſcurvy in particular ſeems to have been owing chiefly to their having had a good paſſage, and touching at different places, where proper refreſhments were procured them by their brave and wiſe commander. Upon their arrival at *Fort St. David*'s, the ſurgeon to that hoſpital acquaints me, that the men of wars crews became as highly ſcorbutic, as any of the others, whoſe ſhips were not provided with the machine.

The caſe of our annual *Greenland* ſhips, who are ſo well fitted, large, and convenient, and carry no more men than are juſt ſufficient to navigate them, puts it beyond all doubt, that confined putrid air, bad proviſions and water, have often no ſhare in producing this diſeaſe. For confirmation of which, ſee an account of them, part 2. chap. 5.

ſtance.

ſtance. For, in order to conceal ſo great a number of ſick from the viſit of the officers of health, they were under a neceſſity of ſhutting them up for ſome time together in a cloſe place. For this purpoſe they were with great difficuly removed into the Captain's ſtore-room; where there is generally worſe air than in any other part of the ſhip. This was performed with imminent danger to many of their lives. Several of them, though moved with extreme caution, fell into the ſcorbutic *deliquium*; whoſe preſervation was owing to the judgment of their ingenious ſurgeon, and to the liberality of the Captain, who, upon this occaſion, ordered them to be plentifully ſupplied with his richeſt cordial wines. But every one of theſe men recovered on board by proper treatment before they left the place, without being landed. The ſhip lay ſtrict quarentine a fortnight. After that they were obliged to be extremely circumſpect in allowing even thoſe who were pretty well recovered, to go on ſhore; as their ill looks might have betrayed their ſituation to the *Portugueſe*. This ſhip had no ventilators: and it is natural to ſuppoſe there might be ſome remiſſneſs in the article of cleanlineſs, where there was ſuch a number of ſick, who, notwithſtanding, all recovered.

The learned writer *(a)* of the great Lord *Anſon*'s voyage, after clearly evincing the falſity of many ſpeculations concerning this diſ-

(a) The Reverend Mr. *Walter.*

eaſe,

eaſe, and juſtly exploding ſome opinions which uſually paſs current about its nature and cauſe, is pleaſed modeſtly to offer a very plauſible and ingenious conjecture, well deſerving conſideration. "Perhaps a diſtinct and adequate knowledge of the ſource of this diſeaſe may never be diſcovered. But, in general, there is no difficulty in conceiving, that as a continued ſupply of freſh air is neceſſary to all animal life, and as this air is ſo particular a fluid, that without loſing its elaſticity, or any of its obvious properties, it may be rendered unfit for this purpoſe, by the mixing with it ſome very ſubtile, and otherwiſe imperceptible effluvia; it may be conceived, I ſay, that the ſteams ariſing from the ocean may have a tendency to render the air they are ſpread through, leſs properly adapted to the ſupport of the life of terreſtrial animals, unleſs theſe ſteams are corrected by effluvia of another kind, and which perhaps the land alone can ſupply."

It muſt be allowed, that the air, which is a compound of almoſt all the different bodies we know, has many latent properties, by which animals are variouſly affected, and theſe we neither can at preſent, nor perhaps ever will be able to inveſtigate. We do not even know certainly what this *pabulum vitæ* is in that fluid, which preſerves and ſupports animal life. The only means then we have to judge of the exiſtence of ſuch an occult

quality as may be ſuppoſed peculiar to the air of the ocean, muſt be from its effects. Theſe, upon this ſuppoſition, ought to be moſt noxious, and moſt ſenſibly perceived, in the middle of the great oceans, and at the wideſt diſtance from the continents and iſlands, where there is the greateſt want of land-air, and of its vital influences, which may be preſumed ſo neceſſary to the ſupport of the life of terreſtrial animals. But it is experienced, that ſhips cruiſing upon certain coaſts, at a very ſmall diſtance from the ſhore, where the air conſequently differs widely from that of the main ocean, as being impregnated with many particles from the land, and is almoſt the ſame with that of the ſea-port towns, are equally, if not more, afflicted with this diſeaſe, than others are in croſſing the ocean. And it will be found univerſally to appear in a much ſhorter time, and rage with greater violence (all circumſtances being otherwiſe alike) in a ſquadron cruiſing in the narrow ſeas of the *Baltic* and *Channel*, or upon the coaſts of *Norway* and *Hudſon's Bay*, than in another continuing the ſame length of time in the middle of the *Atlantic* ocean. We often obſerve our *Channel* cruiſers quickly over-run with the ſcurvy; while their conſorts, fitted out at the ſame port, and conſequently with the ſame ſtate of proviſions and water, who ſoon left them, and ſtretching into the main ocean upon a voyage to the *Indies*, or upon a much longer cruiſe off the

Canaries

Canaries or *Cadiz*, kept pretty free from it. For my own part, I never could remark any alteration upon our ſcorbutic patients, while we continued for many days cloſe in upon the *French* ſhore, with the wind or air coming from thence, or when, at a greater diſtance from any land, we kept the middle of the *Channel*: and yet, in either of thoſe ſtations, difference of weather had a remarkable influence upon ſcorbutic ailments.

Nay, ſhips and fleets, without going to ſea, are often attacked by this malady while in harbour. Thus, when Admiral *Matthews* lay long in *Hieres* bay with his fleet, many of the ſeamen became highly ſcorbutic; on which account ſome hundreds were ſent to *Mahon* hoſpital. And the ſame has happened to our fleets when at *Spithead*, and even when lying in *Portſmouth* harbour. This diſeaſe is not indeed peculiar to the ocean, there being many inſtances of its raging with equal violence at land *(b)*.

From what has been ſaid, it appears, that the ſtrong *prediſpoſing cauſes* to this calamity at ſea, are not conſtant, but caſual. For though it ſhould be granted, that the ſea air gives always a tendency to the ſcorbutic *diatheſis*, yet the evil proves often highly epidemic and fatal in very ſhort voyages, or upon a very ſhort continuance at ſea, to crews of ſhips who, at other times,

(b) Vid the caſe of the *German* troops in *Hungary*, of the *Ruſſian* armies, of the garriſon in *Breda*, part 3. and garriſon of *Fort William*.

have

have continued out much longer, cruiſing in the ſame place, and in parallel circumſtances of water and proviſions, and yet have kept entirely free from it. Thus, the great Lord *Anſon* cruiſed for four months, waiting for the *Acapulco* ſhip, in the *Pacific* ocean; during which time, we are told, his crews continued in perfect health: when, at another time, after leaving the coaſt of *Mexico*, in leſs than ſeven weeks at ſea, the ſcurvy became highly epidemic, notwithſtanding plenty of freſh proviſions and ſweet water on board. And when it raged with ſuch uncommon malignity in paſſing *Cape Horn*, it deſtroyed above one half of his crew, in leſs time than he kept the ſeas in perfect health, in the before-mentioned cruiſe.

I had an opportunity in two *Channel* cruiſes, the one of ten weeks, the other of eleven, *ann.* 1746 and 1747, in his Majeſty's ſhip the *Saliſbury*, a fourth rate, to ſee this diſeaſe rage with great violence. And here it was remarkable, that though I was on board in ſeveral other long *Channel* cruiſes; one of twelve weeks particularly, from the 10th of *Auguſt* to the 28th of *October*; yet we had but one ſcorbutic patient; nor in any other, that I remember, had we the leaſt ſcorbutic appearance. But in thoſe two I have mentioned, the ſcurvy began to rage after being a month or ſix weeks at ſea; when the water on board, as I took particular notice, was uncommonly ſweet and good; and the ſtate of proviſions

ſuch as could afford no ſuſpicion of occaſioning ſo general a ſickneſs, being the ſame in quality as in former cruiſes. And though the ſcorbutic people were, by the generous liberality of that great and humane commander, the Hon. (now Commodore) *George Edgcumbe*, daily ſupplied with freſh proviſions, ſuch as mutton-broth and fowls, and even meat from his own table; yet, at the expiration of ten weeks, we brought into *Plymouth* 80 men, out of a complement of 350, more or leſs afflicted with this diſeaſe.

Now, it was obſervable, that both theſe cruiſes were in the months of *April*, *May*, and *June*; when we had, eſpecially in the beginning of them, a continuance of cold, rainy, and thick *Channel* weather, as it is called: whereas in our other cruiſes, we had generally very fine weather; except in winter, when, during the time I was ſurgeon, the cruiſes were but ſhort. Nor could I aſſign any other reaſon for the frequency of this diſeaſe in theſe two cruiſes, and our exemption from it at other times, but the influence of the weather; the circumſtances of the men, ſhip and proviſions, being in all other reſpects alike. I have more than once remarked, that after great rains, or a continuance of cloſe foggy weather, eſpecially after ſtorms with rain, the ſcorbutic people generally grew worſe; but found a mitigation of their ſymptoms and complaints, upon the weather becoming drier and warmer for a few

few days. And I am certain it will be allowed, by all who have had an opportunity of making obſervations on this diſeaſe at ſea *(c)*, or

(c) Extract of a letter from Mr. Murray.

Of the ſeveral antecedent or efficient cauſes of this diſeaſe, it is not to be doubted, but a moiſt air, or hazy, cloudy weather, is among the principal. A particular inſtance of which happened in a cruiſe we went upon in the *Canterbury*, along with another ſhip; after having laid ſix months in *Louiſburg* harbour, where the ſeamen had great plenty and variety of fiſh, and where we were properly victualled with ſound proviſions, and very good bread and water. We cruiſed not far from the *Bahama Iſlands*; the weather for moſt part was ſtormy, foggy, and very wet. Before we had been at ſea a month, the ſcurvy was very epidemical on board both ſhips; and in ſix weeks we had 50, the other (the *Norwich*) 70 patients in this diſeaſe: whereas at another time, in different weather, we were at ſea nigh as many months, before the like ſymptoms and diſeaſes appeared; and even then were nothing near ſo epidemical. The particulars of that cruiſe were as follow:

We ſailed 29th *November* from *Cape Breton*, and in two days were in lat. 43° 18′; and by the 11th *December* were in 29° 56′, near which latitude we kept cruiſing to the 7th of *January*. During which time the winds were ſo variable, that it was hard to tell which point of the compaſs they inclined moſt to, or continued longeſt in. The weather was extremely cold, foggy, and moiſt, the beginning of the month; but grew gradually warmer as we ſunk our latitude. But that its moiſture continued, will appear from the following account of rainy days, which you have here, with the other ſtate of the weather. *December*. Rain from the 1ſt to the 5th; 7th, 11th, 16th, 18th, 21ſt to 23d; 27th, 29th. Freſh gales 1ſt, 2d, 3d, 4th, 6th, 7th, 10th, 11th, 14th to 25th; 27th to 31ſt. Thunder and lightning 3d and 29th.—A fog the 1ſt.—Moſt part of the month cloudy and hazy. 174$\frac{6}{7}$, *January*. The weather this month was in general more moderate; but, conſidering our latitude, not very warm. Rain the 2d, 6th, 10th, 13th, 15th, 16th, 18th, 19th, 24th, 25th, 26th, 31ſt. Weather cloudy for ſeven days, but no fogs. Calm the 2d. Freſh breezes 6th, 7th, 9th, 10th, 12th, 16th to 20th; 24th, 25th, 26th, 31ſt.

or will attentively conſider the ſituation of ſeamen there, that *the principal and main predisposing cauſe* to it, is a manifeſt and obvious quality of the air, *viz.* its *moiſture*. The effects of this are perceived to be more immediately hurtful and pernicious in certain conſtitutions; in thoſe who are much weakened by preceding ſickneſs; in thoſe who, from a lazy inactive diſpoſition, neglect to uſe proper exerciſe; and in thoſe who indulge a diſcontented melancholy humour: all which may be reckoned the *ſecondary diſpoſing cauſes* to this foul and fatal miſchief.

As the atmoſphere at ſea may always be ſuppoſed moiſter than that of the land; hence there is always a greater diſpoſition to the ſcorbutic *diathesis* at ſea, than in a pure dry land-air. But, ſuppoſing the like conſtitution of air in both places, the inconveniencies which perſons ſuffer in a ſhip during a damp wet ſeaſon, are infinitely greater than people who live at land are expoſed to; theſe latter having many ways of guarding againſt its pernicious effects, by warm dry cloaths, fires, good lodging, *&c.* whereas the ſailors are obliged not only to breathe in this air all day, but ſleep in it all night, and frequently in wet

The diſeaſes depending upon this weather, were at firſt, *plethoræ*, from the ſudden change from cold to warmth; ſome acute fevers; and particularly two ardent ones, which carried off the patients. About the end of *December*, people began to complain of the ſcurvy; and before the middle of *January* we had 16 patients in that diſeaſe; and by the 25th, when we arrived at *St. Thomas*, we had no leſs than 50 patients in it; and our conſort the *Norwich* 70.

bed-

bed-cloaths, the ſhip's hatches being neceſſarily kept open. And indeed one reaſon of the frequency of the ſcurvy in the above cruiſes, was no doubt the often carrying up the bedding of the ſhip's company to quarters; where it was ſometimes wet quite through, and continued ſo for many days together, when, for want of fair weather, there was no opportunity of drying it.

No perſon ſenſible of the bad effects of ſleeping in wet apartments, or in damp bed-cloaths, and almoſt in the open air, without any thing ſufficiently dry or warm to put on, will be ſurpriſed at the havock the ſcurvy made in Lord *Anſon*'s crew in paſſing *Cape Horn*, if their ſituation in ſuch uncommon and tempeſtuous weather be properly conſidered.

During ſuch furious ſtorms, the ſpray of the ſea raiſed by the violence of the wind, is diſperſed over the whole ſhip; ſo that the people breathe, as it were, in water for many weeks together. The tumultuous waves inceſſantly breaking in upon the decks, and wetting thoſe who are upon duty as if they had been ducked in the ſea, are alſo continually ſending down great quantities of water below; which makes it the moſt uncomfortable wet lodging imaginable: and, from the labouring of the ſhip, it generally leaks down, in many places, directly upon their beds. There being here no fire or ſun to dry or exhale the moiſture, and the hatches neceſſarily kept ſhut, this moiſt, ſtagnating,

confined air below, becomes moſt offenſive and intolerable. When ſuch weather continues long, attended with ſleet and rain, as it generally is, we may eaſily figure to ourſelves the condition of the poor men; who are obliged to ſleep in wet cloaths and damp beds, the decks ſwimming with water below them; and there to remain only four hours at a time; till they are again called up to freſh fatigue, and hard labour, and again expoſed to the waſhing of the ſea, and rains. The long continuance of this weather ſeldom fails to produce the ſcurvy at ſea.

As to its breaking out ſo immediately in thoſe ſhips, upon their leaving the coaſt of *Mexico (d)*, it was not only owing to their finding ſo few refreſhments, eſpecially fruits and vegetables fit to be carried to ſea, at the harbour of *Chequetan*; but alſo to the inceſſant rains they had in their paſſage to *Aſia*, and the great inconveniencies that neceſſarily muſt attend ſo long a continuance of ſuch weather at ſea. To which it may be added, that, by obſervations made on this diſeaſe, it appears, that thoſe who are once infected with it, eſpecially in ſo deep a degree as that ſquadron was, are more ſubject to it afterwards than others. I remember, that many of them who returned to *England* with Lord *Anſon*, and afterwards went to ſea in other ſhips, were much more liable to the ſcurvy than others.

(d) Part 3. chap. 3.

It

It was however remarkable here, that though the calamity began ſo very ſoon after their leaving land; yet, in ſo tedious a paſſage as four months, it did not rage with that mortality as in paſſing *Cape Horn:* nor did it acquire ſo great virulence; as appears by its being ſo quickly removed upon their landing. And this was owing to the abſence of another cauſe, which is found greatly to inforce and increaſe the diſtreſs, *viz.* cold; the combination of which with moiſture is, upon all occaſions, experienced to be the moſt powerful prediſpoſing cauſe to this malady; though indeed the latter of itſelf is found ſufficient to produce it. And here frequent waſhing and cleaning of the ſhip, as was obſerved, did not ſtop the progreſs of the diſeaſe; becauſe it did not remove the cauſe, no more than *Sutton*'s machine is found to do; which only renews the air, without correcting its moiſture.

Now, any perſon who has ſufficiently conſidered the ſituation of a ſhip's crew, expoſed for many weeks to ſtormy, rainy, or perpetual foggy cloſe weather at ſea, will not by this time be ſurpriſed at our aſſigning dampneſs or moiſture, as a principal cauſe of the frequency and virulency of this diſeaſe upon the watry element. And this is not only agreeable to my own experience, but is confirmed by all juſt obſervations that were ever made on this diſtemper. In the very firſt juſt account we ever had of it in *Europe*, from *Olaus*

Magnus (e), it is remarked, That cold damp lodgings contributed greatly towards its production; that its virulence was always increaſed by cold and raw exhalations from the wet and damp walls of houſes; whereas people living in drier apartments, were not equally ſubject to it. And accordingly we find, that petty officers, who ſleep in cloſe births, as they are called, with canvas hung round, by which they are ſheltered from the inclemency of the weather; as alſo ſeamen who go well clothed, dry, and clean, though uſing the ſame diet with the reſt of the crew, are not ſo ſoon infected. This is the principal reaſon why officers obliged to live on the ſhip's proviſions, as the warrant-officers often do (with this difference, that they drink a greater quantity of brandy and ſpirits, which, as ſhall be mentioned afterwards, ſhould in a particular manner diſpoſe them to this diſeaſe) by lying in warm dry cabbins, and going better cloathed, are ſeldom attacked by the ſcurvy; unleſs upon its moſt virulent rage, and when the common ſailors have been previouſly almoſt deſtroyed by it.

It is obſervable, that ſuch a ſituation as has been deſcribed, together with the uſe of ſuch improper diet as ſhall hereafter be mentioned, produces the ſcurvy in any climate: but its virulence will always be greatly augmented by the addition of cold. Thus we find it a much more frequent diſeaſe in winter than

(e) Quoted at large, part 3. chap. 1.

in

in ſummer, and in colder than in warmer climates. Ships that go to the north, as to *Greenland*, and up the *Baltic*, are peculiarly ſubject to it; whereas it is generally owing, in ſouthern latitudes, to the continual rains which fall there at certain ſeaſons, and more particularly to the great length of theſe voyages. In ſuch fair-weather climates ſhips are ſometimes becalmed for weeks together; and thus the ſailors become quite indolent, and from want of due exerciſe on that watery element, contract this malady. But a combination of moiſture with cold, is the moſt frequent and genuine ſource of this diſeaſe: and a very intenſe degree of cold, as in *Greenland*, *&c.* is experienced to have a moſt pernicious influence in heightening its malignity.

What effects are produced by theſe powerful cauſes on the human body, it is not my preſent purpoſe to explain *(f)*. It may be ſufficient here only to obſerve, that moiſture is the parent of corruption or putrefaction in nature; and, by the obſervation of all phyſicians from the days of *Hippocrates*, a moiſt warm air begets the moſt malignant putrid diſeaſes, even the plague itſelf. But moiſture concurring with other peculiar circumſtances, as a groſs diet, cold, *&c.* diſpoſes in a particular manner to the ſcorbutic corruption.

The qualities of the moiſt ſea-air will certainly be rendered ſtill more noxious, by being confined in a ſhip without due circula-

(f) Vid. chap. 6.

tion;

tion; as air at all times in this ſtate loſes its elaſticity, and is found highly prejudicial to the health and life of animals; but becomes much more ſo where ſtagnating water is pent up along with it, as it is from thence more ſpeedily diſpoſed to putrefaction. It is likewiſe heated in ſhips by paſſing through the lungs of many people, and impregnated with various putrid effluvia. Hence the eagerneſs and longings of ſcorbutic people in ſuch circumſtances for the land-air, and the high refreſhment to their ſenſes upon being put on ſhore, are very natural; but no more than what the vapour of freſh earth would afford to a perſon after being long confined in a cloſe, damp, unwholeſome air; as that of a priſon, dungeon, or damp apartment at land; and what we all feel, upon taking in the freſh country-air, perfumed with the various odours of nature, after being obliged to breathe in a crouded, dirty, populous city.

I come, in the next place, to an additional, and extremely powerful cauſe, obſerved at ſea to occaſion this diſeaſe, and which concurring with the former, in progreſs of time, ſeldom fails to breed it. And this is, the want of freſh vegetables and greens; either, as may be ſuppoſed, to counteract the bad effects of their before-mentioned ſituation; or rather, and more truly, to correct the quality of ſuch hard and dry food as they are obliged to make uſe of. Experience indeed ſufficiently ſhews, that as greens or freſh vegetables, with ripe fruits,

fruits, are the beſt remedies for it, ſo they prove the moſt effectual preſervatives againſt it. And the difficulty of obtaining them at ſea, together with a long continuance in the moiſt ſea-air, are the true cauſes of its ſo general and fatal malignity upon that element.

The diet which people are neceſſarily obliged to live upon while at ſea, was before aſſigned as the *occaſional cauſe of the diſeaſe (g)*; as in a particular manner it determines the effects of the before-mentioned prediſpoſing cauſes to the production of it. And there will be no difficulty to conceive the propriety of this diſtinction, or underſtand how the moſt innocent and wholeſome food, at times, and in peculiar ſituations, will with great certainty form a diſeaſe. Thus, if a man lives on a very ſlender diet, and drinks water, in the fens of *Lincolnſhire*, he will almoſt infallibly fall into an ague.

All rules and precepts of diet, as well as the diſtinction of aliment into wholſome and unwholſome, are to be underſtood only as relative to the conſtitution or ſtate of the body. We find a child and a grown perſon, a valetudinarian and a man of health, require aliment of different kinds; as does even the ſame perſon in the heat of ſummer and in the depth of winter, during a dry or rainy ſeaſon. Betwixt the tropics, the natives live chiefly on fruits, ſeeds, and vegetables; whereas northern nations find a fleſh and ſolid diet more

(g) P. 56.

ſuitable

ſuitable to their climate. In like manner it appears, I think, very plainly, that ſuch hard dry food as a ſhip's proviſions, or the ſea-diet, is extremely wholeſome; and that no better nouriſhment could be well contrived for labouring people, or any perſon in perfect health, uſing proper exerciſe in a dry pure air; and that, in ſuch circumſtances, ſeamen will live upon it for ſeveral years, without any inconvenience. But where the conſtitution is prediſpoſed to the ſcorbutic taint, by the cauſes before aſſigned (the effects of which, as ſhall be ſhewn in a proper place *(b)*, are a weakening of the animal powers of digeſtion) the influence of ſuch diet in bringing on this diſeaſe, ſooner or later according to the ſtate and conſtitution of the body, becomes extremely viſible.

The firſt, generally, who feel its effects, are thoſe who are recovering from other diſeaſes, or ſome preceding fit of ſickneſs, by which the whole body, and the digeſtive faculties, have been greatly weakened; and are in this condition obliged to uſe the ſhip's fare. Thus, in *May* 1747, when there prevailed ſeveral inflammatory diſorders, particularly peripneumonic fevers, all who were recovering from them became highly ſcorbutic. The next who complained, were the indolent and lazy; ſuch as are commonly called *ſculkers*, and uſe little or no exerciſe, a principal help to digeſtion. As the diſeaſe gathered ſtrength,

(b) Chap. 6.

it attacked thoſe who had formerly laboured under it, and had been our patients in *May* 1746; where the conſtitution had acquired a tendency to it from being formerly deeply infected. It afterwards became more univerſal; but was confined to the common ſeamen, particularly to the raweſt and neweſt ſailors. Impreſt men are extremely liable to its attack, by reaſon of their diſcontented ſtate of mind; and the marines, by not being accuſtomed to the ſea.

I obſerved it increaſed in frequency and virulence, upon the ſhip's ſmall-beer being exhauſted, and having brandy ſerved in its place; and this laſt obſervation I made in both cruiſes.

But it will be now proper to inquire into the diet which mariners are neceſſarily obliged to live upon at ſea. And as it appears to be the principal occaſional cauſe of their malady, it may be worth while to conſider ſea-proviſions in their beſt ſtate; it being found by experience, that, notwithſtanding the ſoundneſs and goodneſs of both water and proviſions, the calamity often rages with great fury, and can be removed only by change of diet. Now, if in this caſe they appear to have ſo great an influence in forming the diſtemper, what ill conſequences may not reaſonably be expected from a much worſe ſtate of them? as from putrid beef, rancid pork, mouldy biſcuit and flour, or bad water, which are misfortunes common at ſea? all which muſt

muſt infallibly have bad effects in ſo putrid a diſeaſe. As alſo what is often the caſe in long voyages, a ſcarcity of proviſions, and eſpecially want of water; the conſequence of which will be ſhewn in its proper place *(i)*.

It muſt be remarked in general, that the ſea-diet is extremely groſs, viſcid, and hard of digeſtion. It conſiſts of two articles, *viz.* the ſweet farinaceous ſubſtances unfermented; and ſalted, or dried fleſh and fiſh.

But more particularly, in our Royal navy, whoſe proviſions, for goodneſs and plenty, exceed thoſe of any other ſhips or fleets in the world, every man has an allowance of a pound of biſcuit a-day; which, in the manner it is baked, will be found more ſolid and ſubſtantial food, than two pounds of ordinary well-baked bread at land. And this is a principal article of their diet. But the ſea-biſcuit undergoes little or no fermentation in baking, and is conſequently of much harder and more difficult digeſtion, than well-leavened and properly-fermented bread. For it muſt be here underſtood, that the meally parts of vegetable ſeeds diſſolved only in water, are by experience found to make too viſcid an aliment, to be conſtantly uſed by the generality of mankind: whereas, by fermentation, and the acid in the leaven, the glutinous viſcidity and tenacious oils of theſe meally ſubſtances are broken and ſubdued; and they become eaſily diſſolvable afterwards in water,

(i) Chap. 6.

with

with which before they could only make a paſte or glue; and are now miſcible with all the humours of the body. Well-baked bread, which has undergone a ſufficient degree of fermentation, is of light and eaſy digeſtion; and indeed the moſt proper nouriſhment for a man, as it is adapted by its aceſcency to correct a fleſh-diet: whereas, on the contrary, ſea-biſcuit, not being thus duly fermented, will in many caſes afford too tenacious and viſcid a chyle, improper for the nouriſhment of the body, where the vital digeſtive faculties are weakened and impaired.

The next article in their allowance of what is called *freſh proviſions*, is one pound and a half of wheat-flour in the week, which is made into pudding with water, and a certain proportion of pickled ſuet. This laſt does not keep long at ſea, ſo that they have often raiſins or currants in its place. But flour and water boiled thus together, form a tenacious glutinous paſte; requiring the utmoſt ſtrength and integrity of the powers of digeſtion, to ſubdue and aſſimilate it into nouriſhment. We find, that weak, inactive, valetudinary people, cannot long bear ſuch food.

There remain two other articles of freſh proviſions, of which the allowance to each man is more than they generally can uſe. The firſt is, ground oats, boiled to a conſiſtence with water, commonly called *burgow*, or made into water-gruel in a morning. Of this the *Engliſh* ſailors eat but little; though in their circum-

circumſtances it would ſeem to be very wholſome, as being the moſt acefcent part of their diet. The other is boiled peas; which are of a mild and ſoftening quality; but having hardly any aromatic parts, they are apt in weak ſtomachs to breed flatulencies, and occaſion indigeſtion; and, like all other farinaceous ſubſtances, give a *lentor* or viſcidity to water in which they are boiled. It is evident, that in ſome caſes they muſt afford groſs and improper nouriſhment.

This is the allowance of freſh proviſions; and they have, beſides, a proper quantity given them of ſalt butter and cheeſe. The latter of which is experienced to differ extremely in its qualities, or in the eaſe or difficulty with which it is digeſted, according to its ſtrength, age, *&c.* But the *Suffolk* cheeſe will in many inſtances, inſtead of aſſiſting digeſtion, which other cheeſe is ſaid to do, prove a load to the ſtomach itſelf; as well as the ſalt butter, or ſweet oil, given ſometimes in its place: neither of which indeed correct the qualities of their other food.

Laſtly, Of fleſh each man has for allowance, two pounds of ſalt beef, and two pounds of ſalt pork *per* week. But theſe are found by every one's experience to be much harder, and more difficult to digeſt, than freſh meats; and, after all, to afford a much more improper chyle and nouriſhment. No perſon can long bear a diet of ſuch ſalt fleſh-meats, unleſs it is corrected by bread, vinegar, or vegetables.

To

To the above articles, which are the proviſions with which our navy is uſually ſupplied, may be added, ſtock fiſh, ſalt fiſh, dried or jerked beef, often eat at ſea; with whatever is of the like groſs, viſcid, and indigeſtible nature: all which will have ſtill more noxious qualities when unſound, or in a corrupted ſtate.

For drink, the government allows, where it can be procured, good ſound ſmall-beer; at other times wine, brandy, rum, or arrack, according to the produce of the country where ſhips are ſtationed. Beer and fermented liquors of any ſort will be found the beſt antiſcorbutics, and moſt proper to correct the ill effects of their ſea-diet and ſituation; whereas diſtilled ſpirits have a moſt pernicious influence on this diſeaſe.

As I ſhall have occaſion elſewhere *(k)* to ſhew the natural conſequences of ſuch diet, it will be ſufficient here to obſerve, that though the long continuance and conſtant uſe of any one particular ſort of food, without variety, has its inconveniencies, and is juſtly condemned by phyſicians *(l)*, nature having ſupplied us with an ample variety, deſigned no doubt for our uſe; yet the fact here truly is, that ſuch food as has been mentioned, is at particular times, and in certain circumſtances, not properly adapted to the ſtate of the

(k) Chap. 6. on the theory of the diſeaſe.
(l) *Vid. Celſum de medicina.*

body, and the condition of the digeſtive powers *(m)*.

Our appetites, if they are not depraved, are, upon this and many other occaſions, the moſt faithful monitors, and point out the quality of ſuch food as is ſuited to our digeſtive organs, and to the ſtate and condition of the body. For where there is a diſpoſition

(m) A learned Profeſſor was pleaſed to ſend me the following queries.

"May not the ſcurvy be owing to ſuch a cauſe as other "epidemical diſeaſes; that is, ſomething in the air which "we do not know, nor will probably ever know, though "we ſee its various effects in fevers, ſmall-pox, meaſles, "plague, &c. And may not this be a modern *miaſma*, as "well as what produces ſome of theſe diſeaſes? By obſer- "vations the *cauſæ progumenæ* may be diſcovered, and by "diſſections the effects may be obſerved; but the *cauſa* "*proxima* may be yet unknown. In the plains of *Stirling-* "*ſhire* the people live moſtly on crude peaſe-meal, have very "bad weather, and have great fogs from their own grounds, "and from the frith; yet, among the numerous poor pa- "tients I have from that place when in the country, I have "not ſeen one with a genuine ſcurvy."

Anſwer. As to its being a *modern miaſma*, I think this cannot, with any colour of reaſon, be inferred from the ſilence of ancient hiſtorians, who have mentioned few or no camp-diſeaſes; nor on account of its being imperfectly, if at all, deſcribed by ancient phyſicians, for reaſons aſſigned part 3. chap. 1. The firſt deſcription of it I have met with, and a very accurate one, is in the year 1260 (vid. part 3. chap. 1.) There is no account of it again until after *ann.* 1490. Yet we cannot well ſuppoſe, that during that period there was no ſuch diſeaſe in the world, or that people in ſuch ſituations as are now to be mentioned, would not contract the ſcurvy.

It is demonſtrable from the appearance of the calamity in every part of the world, that no ſtate of air whatever is capable of producing it, without the concurrence of groſs viſcid diet, and abſtinence from green vegetables. I have known the *Channel* fleet bury a hundred men in a cruiſe, and land a thou-

tion to the ſcorbutic corruption from a long continuance in the moiſt ſea-air, concurring with the viſcous, glutinous, and too ſolid diet uſed there, nature points out the remedy. In ſuch a ſituation, the ignorant ſailor, and the learned phyſician, will equally long, with the moſt craving anxiety, for green vegetables, and the freſh fruits of the earth; from whoſe healing,

a thouſand more quite rotten in the ſcurvy; yet, among the number, there was not an officer, not even a petty officer.

In *Hungary*, where there muſt have been the ſtrongeſt ſcorbutic diſpoſition in the air (Vid. *Kramer*), not only the officers, and natives of the country, but even the dragoons, by having more pay, and conſequently better diet, cloathing, and lodging, though equally ſubject to the other diſeaſes of the country, yet kept free from the ſcurvy. Who were attacked by it? Only the *Bohemians*, who eat the coarſeſt and moſt groſs food. The *Bohemians* uſed no other than what was the ordinary diet of their own country, as we are informed by *Kramer*. The ſeamen in the *Channel* cruiſers had the very ſame proviſions as other ſhips who went upon different ſtations: yet it is evident one cauſe in both places was the diet; as a different diet prevented the diſeaſe, and change of diet quickly cured it.

Now, there muſt have been a quality in the air of *Hungary* different from that of *Bohemia*; ſomething which rendered a diet harmleſs in the one country, hurtful in the other. The indiſpoſition of the air in *Hungary* was very obvious. The diſeaſe prevailed only in the ſpring, and during a wet ſeaſon; was much more virulent in ſome parts of the country than in others. *Kramer* enumerates the different places where it raged moſt, *viz.* where-ever the ſoil was damp and marſhy. This obſervation has been made not only in *Hungary*, but in every other part of the world; and I will venture to affirm, that, without any one exception,

Scorbutus locis aridis ignotus eſt. Sydenham.

Moiſture was diſcovered to be one of the cauſes of this malady by *Ronſſeus*, the very firſt author who ever wrote expreſsly upon it. The facts he produces, ſeem demonſtratively to prove it; beſides having the corroborating evidence of every accurate obſervation made ſince his time. All

healing, attenuating, and ſaponaceous virtues, relief only can be had. All ſuch people, in the height of the malady, not only employ their thoughts all day long on ſatisfying this importunate demand of nature, but are apt to have their deluded fancies tantaliſed in ſleep with the agreeable ideas of feaſting upon them at land. What nature, from an inward feeling,

which, *viz.* the experience of two hundred years, we muſt contradict, by excluding this cauſe, and referring the ſcurvy to occult *miaſmata*, or ſuch latent cauſes in the air as produce fevers, and ſome other epidemical diſeaſes. There are indeed perhaps but few diſeaſes whoſe cauſes are more evident to the ſenſes, and admit of more expreſs proofs. *Stugart*, in *Germany*, was formerly noted for being a place where the ſcurvy raged much; but, upon drying up a large lake in the neighbourhood of the town, the diſeaſe has ſince quite diſappeared. Along the banks of the *Rhine*, from *Dourlach* to *Mentz*, particularly at *Philipſburg*, it often ſucceeds large inundations of that river. *Sinopæus* obſerved at *Cronſtadt*, that the appearance of the ſcurvy, and its malignity, always depended upon the wetneſs of the ſeaſon; a dry ſeaſon inſtantly ſtopt it.

Where we have ſuch undeniable proofs of the effects of moiſture and drineſs, I cannot ſee any reaſon for having recourſe to occult *miaſmata* in the air, or the like imaginary and uncertain agents, for breeding a diſeaſe which a perſon contracts from moiſt air, by lying in a damp lodging, and uſing at this ſeaſon too ſolid groſs food. Such circumſtances produce the diſtemper in every part of the world: and it may effectually be prevented at any time, by living in dry apartments, going well cloathed, and having proper diet.

Though I have called the one *the prediſpoſing*, the other *the occaſional cauſe* of the malady; yet, to ſpeak more properly, they are both of them (*viz. diet* and *moiſture*) *cauſæ proegumenæ*, prediſpoſing cauſes to the diſeaſe. They are each but half-cauſes, neither of them ſingly being able to produce it: but both of them concurring, conſtitute the *cauſa proxima*; *i. e.* all that is requiſite and ſufficient to form the ſcurvy.

As

feeling, makes them thus ſtrongly deſire, conſtant experience confirms to be the moſt certain prevention and beſt cure of their diſeaſe.

Moreover, the ſame cauſes when ſubſiſting at land, have been experienced at times to give riſe to as virulent and epidemic ſcurvies as at ſea *(n)*. Thus, during the ſiege of

As to the caſe of the people in *Stirlingſhire*; have they no onions, coleworts, *&c.?* A meſs of broth twice a-week, ſuch as is made by the pooreſt people in *Scotland*, of green coleworts, barley, and oats, would have preſerved Lord *Anſon*'s ſquadron from the ſcurvy in paſſing *Cape Horn*. It is to be remembered, that theſe cauſes muſt not only conjunctly ſubſiſt, and exert their influences together in a high degree; but muſt act likewiſe a conſiderable time without intermiſſion, eſpecially the diet. Change of food has not only a moſt ſurpriſing effect to recover from a very deplorable ſtate in the ſcurvy, but even the ſmalleſt alteration of diet has a wonderful influence in preventing the approach of it. This is evident from what is ſaid (chap. 5) of the preſent healthfulneſs of our factories at *Hudſon*'s bay; where ſcorbutic *miaſmata* (if any ſuch there be) are not wanting in the air, even at this day; as is plain by the late afflicted condition of *Ellis*'s people (ſee part 3.), whilſt the perſons in thoſe factories were quite healthy. It is farther confirmed by a fact which has more than once occurred. In our fleet, when in conjunction with *Dutch* ſhips, many of our men have become ſcorbutic; mean while the *Dutch* were quite free from it; which was owing to a meſs of pickled cabbage given them now and then.

And, for the ſame reaſon, *viz.* a very ſmall difference in the way of living or diet, even the frequent baths of the ancients, might have preſerved their troops from the ſcurvy when quartered in *Pannonia*, the woody, marſhy part of *Gaul*, *Germany*, and the *Low Countries*; as is evident from the late caſe of the Imperial dragoons.

What I have here ſaid, is not with deſign to exclude the bad effects of ſome other cauſes upon this diſtemper. But to breed a diſeaſe, and to give vigour to it when bred, are very different things.

(n) Vid. part 3. chap. 2. *Vander Mye de morbis Bredanis*, *&c.*

Thorn in the year 1703, ſeveral thouſand *Saxons* ſhut up in that city were cut off by it. But at the latter end of the ſiege, they being blockaded for five months, the ſeaſon appears to have been uncommonly tempeſtuous and rainy, over moſt parts of *Europe*; ſo that, in this ſituation, the inconveniencies and hardſhips they ſuffered, muſt have been equal to thoſe of ſeamen. They were continually expoſed to unwholſome damp weather; their diet was groſs and viſcid, *viz.* ammunition-bread, ſalt and dried meats, and other ſolid and coarſe food; which they were at that time obliged to live upon, being deprived of vegetables. We are told *(o)*, that when ſome few of the moſt common and coarſeſt greens were permitted to be brought into the town, by agreement entered into with the enemy, they were voraciouſly devoured by the officers at the gates, as the greateſt delicacies. The inhabitants, indeed, aſcribed the calamity to the unwholſome beer in the city. But it was obſervable, it attacked and cut off firſt the *Saxon* garriſon, who were moſt expoſed to the inclemency of ſuch weather, by doing hard duty night and day upon the walls. The inhabitants, who remained in warmer lodgings, were much later infected with it; and probably only thoſe, who, upon the garriſon's being almoſt deſtroyed,

(o) Obſervationes circa ſcorbutum, &c. auctore Fred. Bachſtrom.

were

were obliged to do duty. This was a real ſcurvy; as no ſooner the gates were opened, and plenty of vegetables admitted upon the ſurrender of the town, but the diſeaſe quickly diſappeared, after having occaſioned a very dreadful mortality.

2. The next thing to be conſidered, is the peculiar ſituation and circumſtances of ſuch places and countries where it is found to be a conſtant or endemic diſeaſe; which will ſerve further to illuſtrate and confirm what has been advanced.

It is obſerved, that an intenſe degree of cold, ſuch as the inhabitants ſuffer during the hard winters in *Iceland*, *Groenland*, the northern parts of *Ruſſia*, *&c.* together with the diet the poor are neceſſarily obliged to uſe during that rigorous ſeaſon, infallibly gives riſe to this diſorder. And here we cannot but remark the pernicious effects of cold in augmenting its malignity, and rendering it a much more frequent and virulent diſtemper in theſe northern countries, than in warmer climates. It may however be doubted, whether the moſt intenſe degree of cold, provided the air is dry and pure at the ſame time, would breed this malady. For all theſe northern countries are ſubject to great fogs, not only in ſummer, but in winter; and when the cold is exceſſive, are peſtered with what is called *froſt-ſmoak*; a vapour which riſes

out of the ſea like ſmoak from a chimney, and is as thick as the thickeſt miſt *(p)*.

Moreover, it is very certain, that the frequency of this evil in other places, as in the *Low Countries*, where it was formerly greatly endemic, and whoſe authors have furniſhed us with the moſt accurate obſervations, was not owing to their cold and northern ſituation only; for in that caſe, all people living in the ſame degree of cold, would, *cæteris paribus*, have been equally affected: whereas, in the very ſame climate of *Holland*, there were many villages and cities, living on a like diet with their neighbours, who kept entirely free; while others, at no great diſtance from them, were extremely ſubject to it.

Thus, *Ronſſeus (q)* takes notice, that in his time it was a much more frequent malady at *Amſterdam* and *Alcmaer*, than at *Goude* and *Rotterdam*; and at *Dort*, though in the ſame climate, and where the inhabitants eat the ſame food, it was hardly ever to be ſeen: but that, univerſally, in all parts of the country where the ſoil was fenny, damp, and marſhy, it raged with the greateſt violence. This very accurate author obſerves likewiſe, the great influence which the weather had upon it; as, that a long continuance of ſoutherly and weſ-

(p) Vid. *John Edge*'s account of *Greenland*, a *Daniſh* miſſionary, who reſided there fifteen years.

(q) Ronſſeus de magnis Hippocratis lienibus, &c. *ſeu vulgo dicto ſcorbuto.*

terly

terly winds *(r)* always occaſioned great frequency of this diſtreſs; but that rainy ſeaſons, eſpecially, rendered the miſchief quite epidemic and malignant. When this phyſician wrote, his country was little better than a large moraſs, expoſed to frequent inundations from floods and high tides; which, together with the groſs coarſe diet uſed by the *Dutch* at that time, made the ſcurvy perhaps the moſt frequent endemic of their country. But now they are become a rich flouriſhing republic, and have dried and improved their ſoil by dikes and drains, and alſo quite altered their way of living, the diſeaſe appears leſs frequent; and is to be ſeen chiefly among the poorer ſort, who inhabit the low damp parts of the provinces, and continue in their old groſs way of living *(s)*, upon ſalt, ſmoaked

(r) Theſe are obſerved, by *Muſſchenbroek*, to be the moiſteſt winds that blow in *Holland*. *Vid. Element. philoſophiæ naturalis.*

(s) I have the pleaſure of ſeeing moſt of theſe obſervations confirmed ſince they were firſt publiſhed by the learned *Vanſwieten*, who reſided ſeveral years in the *Low Countries*. He has obſerved many in *Holland*, who in winter live on ſalt beef and pork, at the end of that ſeaſon greatly afflicted with the ſcurvy. They are generally recovered in the ſpring, by the uſe of freſh vegetables and fruits: the diſeaſe returning again in winter, upon their returning to uſe their former diet. But in particular he remarked, that by conſtantly eating old acrid cheeſe, their relapſe was haſtened more than by any other cauſe.

As for thoſe who were neceſſarily obliged to live in low moiſt places, it was hardly poſſible to cure them by the moſt powerful medicines. The malady was uſually indeed much abated in ſpring and autumn, by the making uſe of whey for common drink; but otherwiſe their condition was truly to be

ed, often rancid pork, coarſe bread; and are neceſſitated to drink unwholſome ſtagnating waters. They have indeed at times been ſubject to violent returns of their old diſtemper; as in ſeveral of their wars, when obliged to overflow their country with water.

The caſe is the ſame in many other countries at preſent, *viz.* the *Lower Saxony*, and other parts of *Germany*, *Sweden*, *Denmark*, and *Norway*; where, in general, the diſeaſe is much leſs frequent than it was formerly; the face of all theſe countries, and the manner of their living, being much improved within theſe laſt 200 years. They now drink wine more freely (t), brew better ale, live in drier, and more airy commodious houſes, and have greatly drained and improved their lands.

But here it may be worth while to remark, that in all thoſe parts where the ſcurvy was formerly ſo peculiarly endemic, by reaſon of their marſhy and damp ſituation, together with their groſs unwholſome diet, the cold of the climate muſt certainly have contributed

be pitied; for even in the flower of youth they loſt all their teeth, and were tormented with afflicting pains in their joints, eſpecially when idle in winter; their labours in ſummer contributing to their relief. *Commentar. in Aphor. Boerh.* 1160.

He alſo informs us, that it is uſual in *Holland*, after having taken away the turfs for firing, to throw up a bank about the place when overflown with water. They afterwards draw off the water by means of a mill, and ſo convert the ground into paſture. But almoſt all thoſe who live near theſe new drained lands labour under the ſcurvy, which is apparent by their bleeding gums and rotten teeth, nay, by their want of teeth long before they grow old. *Comment. in Aph.* 1150.

(t) *Vid. Brunneri tractat. de ſcorbuto.*

a great deal towards its production. For we obſerve, that at *Venice*, whoſe ſituation is as damp as moſt places, the diſeaſe is unknown. This ſeems owing principally to the heat of their climate, which raiſes the watry vapours to a great height above the ſurface of the earth, and there diſperſes them; giving the inhabitants almoſt conſtantly ſerene fine weather: unleſs it ſhould be rather ſuppoſed, that their light and wholſome diet, and the great quantity of vegetables eat by the *Italians*, are ſufficient, in the moiſteſt parts of their country, to preſerve them from this evil.

I ſhall now, in the third and laſt place, conclude with obſerving the effects of the different cauſes aſſigned, in countries where they prevail leſs frequently; and ſhall reſtrict my obſervations to *Great Britain*.

In cold ſea-port towns, where the ſituation of the place is bleak, low and damp, we generally obſerve the inhabitants afflicted with putrid gums, œdematous ſwelled legs with ulcers, *&c.* whilſt the neighbouring villages, ſituated in a ſandy dry ſoil, and purer air, are entirely free from all ſcorbutic appearances. In places where they have continual rains, and much moiſture, the ſcurvy is endemic; as at *Fort-William (u)*.

They who live in ſwampy inland ſoils, near moraſſes, or incompaſſed with thick woods and foreſts; or in countries ſubject to

(u) Vid. Dr. *Grainger*'s account of it while there in the year 1752, chap. 2.

inun-

inundations from lakes or rivers; or where there are corrupted ſtagnating waters, where the ſun has not ſufficient influence to elevate their vapours to a proper height above the earth, being continually ſurrounded with unwholſome fogs and miſts, are ſubject both to ſcurvies and agues. We may generally obſerve them to have a pale wan colour, and ſcorbutic ſpots on their ſkin; to be of a dull, inactive, melancholy diſpoſition; their ſcorbutic diſcoloured countenances beſpeaking the place of their abode: whereas thoſe who inhabit the mountains, or more dry and healthful places, are remarked to be agile, active, well coloured, and long lived. Thoſe who live in the higher apartments of a houſe, are obſerved to be leſs liable to theſe diſorders, than others who live on the ground-floors of the ſame houſes. The poorer ſort of people, who live in damp vaults and cellars under ground, are moſt afflicted with ſymptoms truly ſcorbutic; as are likewiſe they who are confined in dungeons, damp and unwholſome priſons, and ſpend much of their time ſleeping in apartments not ſufficiently plaiſtered or wainſcotted, where there is a continual moiſture and dewy dampneſs on the ſtone-walls: an inſtance of which I ſaw lately, in a perſon confined in a jail, who became highly ſcorbutic *(w)*.

Different aliments are found by experience to produce the moſt different effects upon this

(w) Vid. chap. 2.

diſeaſe,

diſeaſe. We ſee it moſt common among the poorer ſort of people in the before-mentioned ſituations, who feed much on dried or ſalt fiſh and fleſh, and the unfermented farines, without uſing green vegetables and fruits *(x)*; or upon bread made of peas, or a compoſition of theſe with oats; and, during the winter, eat what is called *brooſe*, which is oat-meal mixed with the fat of ſalt beef; and, for want of freſh and wholſome water, uſe what is either hard and brackiſh, or putrid and ſtagnating.

Different ways of life have likewiſe different influence on this diſeaſe. The lazy and indolent, and thoſe of a ſedentary life, as ſhoemakers, tailors, eſpecially weavers, by reaſon of their working in damp places, are moſt ſubject to it while hard labourers, and thoſe who uſe much exerciſe, though living on the ſame, or even groſſer food, keep entirely free. Fiſhermen, from their way of life, groſs food, and habitual uſe of ſpiritual liquors, are often ſcorbutic.

The paſſions of the mind are experienced here to have a great effect. Thoſe that are of a chearful and contented diſpoſition, are leſs liable to it, than others of a diſcontented and melancholy mind.

Laſtly, It has always been remarked, that, in ſuch circumſtances as have been deſcribed, the preſent ſtate of the body has a powerful influence in diſpoſing to this affliction. They

(x) Vid. two caſes in *Fife*, chap. 2. & 5.

who

who are much exhauſted and weakened by preceding fevers, and other tedious fits of ſickneſs, or they who have unſound and obſtructed *viſcera* (as after agues of the autumnal kind) are apt, by the uſe of improper diet, to become ſcorbutic. Others that labour under a ſuppreſſion of any natural and neceſſary evacuation, as women who have their *menſes* ſuppreſſed, eſpecially if the obſtruction is occaſioned by fear or grief, are more ſubject than others in ſimiliar circumſtances to this diſeaſe; as they are likewiſe at the time that theſe naturally leave them.

The following abſtract from the ingenious Mr. *Ives*'s journal, containing a hiſtory of diſeaſes that occurred on board the *Dragon*, ſerves to confirm many things which have been advanced.

1743. *July.* We have been free from the ſcurvy ever ſince the latter end of *April.* Lay all this month at *Mahon*, where the weather was exceſſively hot. Our men wrought hard, and drank much wine and ſpirits. The diſorders of the foregoing month increaſed, with great inflammations. Theſe were fevers with inflamed tonſils, pleuriſies, and peripneumonies. Sent 17 men to hoſpital.

Auguſt. Continued at *Mahon.* The people received ſome prize-money, which did not better their health. The ſame diſeaſes prevailed as in *July*, but proved fatal to none. Towards the end

end of the month fluxes took place of fevers. Sent 18 to hoſpital.

September. Part of this month at *Mahon*, part at ſea. The weather in the beginning was variable, with rains; towards the latter end moderate and hot. The diſeaſe peculiar to it was the dyſentery: it continued with the patient for the moſt part 5 or 6 weeks, but proved fatal to none. We had alſo ſome ſlight fevers, rheumatiſms, and agues.

October. Moſtly at ſea. The weather pretty moderate, though changeable. Rain and wind the 17th and 18th of the month. My ſick-liſt was made up chiefly of men recovering from the fluxes of laſt month. The diſorder peculiar to this was the rheumatiſm; which however did not prove obſtinate. We had alſo 2 or 3 quartan agues, which continued for ſeveral months.

November. Partly at ſea, partly at *Gibraltar*. From the 1ſt to the 10th freſh eaſterly winds blew often, with rain. The whole month was ſqually, but dry towards the latter end. On the 8th day, 6 or 8 people were taken with pains in their head, ſhiverings, and ſometimes a vomiting. The next day they were feveriſh. On the 3d or 4th they complained of an univerſal prickling under the ſkin, and had a ſhort uneaſy cough. On the 5th or 6th they were covered with little red ſpots like flea-bites, with ſore and watery eyes. On the 8th they either ſweated plentifully, or had a looſeneſs; and then they were ſure to do well ſoon; though ſome ſpit, and others were relieved by urine. 20 ſeized with this ſpecies of meaſles, all recovered. Rheumatiſms ſtill continue.

December. Lay at *Gibraltar*. It was in general a cold, wet, ſtormy month. The ſick-liſt con-

tained various, but not material complaints. Towards the latter end of it we had appearances of an approaching ſcurvy, although at *Gibraltar* (*y*). Sent 22 to hoſpital.

1744. *January.* It was an extreme cold and ſtormy month, with almoſt conſtant rain. On the 8th *p. m.* we had a violent gale, with thick weather. The ſtorm continued the 9th, with much rain *a. m.* From the 13th to the 27th the ſeaſon was uncommonly tempeſtuous, with rain.

On the 8th day we left *Gibraltar*, growing daily worſe in the ſcurvy. On the 10th day 50 ſcorbutic patients were on the ſick-liſt, and by the 20th they were increaſed to 80. Many of them were now extremely bad, with hard contracted limbs, ulcerated legs, rotten gums, ſtinking breath, offenſive ſtools, ſhortneſs of breath, *&c.*

On the 30th of *January* my liſt ſtood thus. Very bad in the ſcurvy 55. Scorbutic fluxes 6. Scurvy with cough 10. Scurvy with ulcers 10. Scorbutic aſthma 1. Scorbutic hæmoptoe 1. Scorbutic hæmorrhoides 1. Other diſorders not ſcorbutic, chiefly colds 6. Sick in all 90. The ſhip at ſea till towards the latter end of the month ſhe arrived at *Hieres* bay.

February was a cold, ſtormy, and rainy month. The weather, eſpecially in the beginning and latter end of it, was extremely rough and uncomfortable.

From the 3d of this month to the 10th, the ſick were on the ordinary days on which they are allowed ſalt beef and pork, ſerved with freſh meat, and broth with greens in it; in all about 5 times.

(*y*) Not for want of the vital influences of land-air, as ſhips here lie cloſely embayed.

Upon

Upon coming into the bay of *Hieres*, our men underſtood the enemy's fleets and ours were very ſoon to engage. There appeared not only in the healthy, but alſo in the ſick, the higheſt marks of ſatisfaction and pleaſure: and theſe laſt mended ſurpriſingly daily; inſomuch that on the 11th of *February*, the day we engaged the combined fleets of *France* and *Spain*, we had not above 4 or 5 but what were at their fighting-quarters. From the 11th to the 15th few or none took notice of their illneſs. On the 15th my liſt ſtood thus. Recovering from the ſcurvy 30. Scorbutic complaints in the firſt ſtage 5. Bad in the ſcurvy 4. Ulcers 4. Pleuriſy 1. Flux 1. *Lumbagines* 3. Agues 2. Coughs and cold 11. Sick in all 61 (*z*).

N. B. No perſon has been ſent on ſhore for cure ſince *December*; and I do not find that above 1 has died. When we got to *Mahon* the latter end of the month, my ſick-liſt was greatly increaſed; thoſe who were ſo much mended before, having relapſed. I here put all the ſick to hoſpital.

March. It was in general a cold, windy, and rainy month. When it did not rain, it was commonly cloudy and hazy. In the latter part of it the wind was more moderate: but on the laſt day of the month we had a ſtrong gale, though without rain. We ſpent all this month at *Mahon*; where we now and then had a freſh patient

(*z*) A ſurpriſing inſtance of the influence of the paſſions of the mind on this diſeaſe! For I think no perſon can aſcribe the alteration of the ſick-liſt from 30th of *January* to 15th *February* to five ſervings or meſſes of broth. May not the relapſes afterwards have been much occaſioned by the unfortunate engagement on the 11th *February*? The *Dragon* however that day did her duty.

in the ſcurvy, whom I always put on ſhore. 5 or 6 ſcorbutic men who had coughs, are now in deep conſumptions. Towards the latter end of the month coughs and ſlight fevers prevailed.

April. On the 1ſt and 2d day the weather was ſtormy. From the 3d to the 7th ſqually, with rain. From the 8th to the 12th moderate and fair. From the 12th to the 20th freſh gales, with rain. From 20th to 26th calm and fair. From thence to the end of the month cloſe rainy weather, but warm. We were this month at ſea on the coaſts of *France*, *Savoy*, and *Genoa*. In the beginning of the month the coughs and colds increaſed; and towards the middle and latter end of it, they were attended with inflammation and danger. 4 or 5 had peripneumonic ſymptoms, 1 of whom died. 3 or 4 had high fevers with delirium, *&c.* 1 of whom died alſo. In the latter end of the month we had two troubleſome ophthalmias.

May. The weather was very warm; ſometimes fair, at other times hazy and rainy. We ſpent this month at ſea as in the laſt, and on our paſſage to *Mahon*.

The diſorders differed little from thoſe in *April*, though not fatal to any. I ſhould have mentioned, that in the latter end of laſt month 2 or 3, who in other reſpects were perfectly healthy, complained of an univerſal cutaneous itchy eruption. More were ſeized with it this month, and it proved very troubleſome. One of them catched cold, fell into a fever, and had near died; but at laſt was ſaved by nature throwing out a ſecond time the peccant matter on the ſkin.

June. Although we were at *Mahon*, where the weather was very hot, and our men worked hard; yet our inflammatory complaints did not increaſe,

but rather leſſened. Towards the middle, and in the end of the month, a gentle diarrhœa prevailed throughout the ſhip's company.

Left *Mahon* the 14th *June*, and arrived at *Gibraltar* the 30th.

July. The weather was exceſſive warm, and for moſt part clear and dry. On the 3d we left *Gibraltar*, and on the 19th or 20th arrived at *Liſbon*.

A few have ſtill gentle diarrhœas; but, in general, a very healthy month.

Auguſt. The weather was for moſt part hot and dry, except the 21ſt day, which was ſqually, with heavy rains. We lay all this month at *Liſbon*, where the men were ſerved with freſh proviſions and greens twice a-week from the city. They had here the fineſt opportunity of being provided with all manner of vegetables. We continued ſtill healthy, with now and then a ſlight diarrhœa.

September. From the 1ſt to the 4th we had high winds; but from the 5th to the 14th the wind was very moderate. All this firſt part of the month the weather was cloudy, hazy, and rainy, with a good deal of lightning. From the 15th to the end of the month the winds were moderate, and weather very changeable, being for moſt part cloudy and rainy, with ſome intermediate days fair, and generally warm. Left *Liſbon* the 3d; got to *Gibraltar* the 15th.

Though a healthy month, yet, towards the middle and latter end of it, we had now and then a ſcorbutic complaint. Sent 9 to hoſpital, for different ailments.

October. Except a few days of good weather and eaſy gales, it was a very windy, rainy, and foggy month; ſometimes hot, at other times cold.

We were much alarmed at the ſudden appearance of the ſcurvy *(a)*. On the 13th I put on ſhore 24 people. We left *Gibraltar* the 14th; and when we came the length of *Minorca*, having received orders to proceed further, I ſent 20 men in the ſcurvy alſo, by the *Portſmouth* ſtoreſhip, to *Mahon* hoſpital.

November. From the 1ſt to the 11th, we had cold fair weather, with variable winds. The remaining part of the month was remarkably bad, with high, piercing, cold winds, much rain, and ſome ſnow.

We arrived at *Vado* the 20th, and ſailed from thence the 29th. Upon our arrival there we had 50 men in the ſcurvy *(b)*.

December was alſo a very cold, windy, and wet month; with but few intermiſſions of little wind, and fair weather.

1755. *January* was much the ſame as the former month. We had but 8 days in it that were moderate and fair.

When we arrived at *Vado*, as before-mentioned, on the 20th of *November*, I gave to every ſcorbutic patient one *China* orange, and three apples; and continued to do ſo daily till the 5th of *December*, when the apples being all gone, they had only the continuance of an orange, which laſted to the 7th of *December*. On the 22d of *November* they had freſh fleſh-broth. On the 27th they had the ſame with turnips boiled in it; and again on the 29th *November*, 1ſt and 2d *December*; which was the whole ſupply of freſh meat and

(a) Not owing to abſtinence for ſo very ſhort a time from vegetables. Their late ſupply at *Liſbon*, was a thing uncommon to them

(b) Putrid air could have but little influence during ſo cold a ſeaſon.

vege-

vegetables we got at *Vado*. On the 8th of *December*, being then off *Sardinia*, Captain *Watſon*, now Rear-Admiral of the Blue, agreeable to his wonted humanity, gave mutton-broth to 21 of our men; the 13th he did the ſame to 45. Now follow the remarks in my diary.

[*November* 29. The ſcorbutic people in general, mend much. Thoſe whoſe limbs were contracted, grow pliable; their rotten gums become ſounder; ſhortneſs of breath, *&c.* better *(c)*.

December 2. They continue to mend much.

December 5. The weather not ſo cold ſince we left *Vado*.

December 6. All are recovering from the ſcurvy.

December 25. My ſick-liſt contained but 30; and theſe almoſt well, and recovered from the ſcurvy.

January 6. We are ſtill at ſea; the weather cold and wet; and for 9 days paſt have been in want of wine for the people. The ſcorbutic patients are relapſed, and more are added to the ſick-liſt, being unfit for duty.

January 8. Anchored at *Mahon*; put to hoſpital 59 in the ſcurvy.]

February. A cold uncomfortable month, which we ſpent at *Mahon*; where we had now and then a caſe in the ſcurvy; but more towards the end of it, with feveriſh ſymptoms. Sent 5 to hoſpital.

March. The weather this month was warmer, but inconſtant. The winds moderate. Left *Mahon* the 17th; arrived at *Gibraltar* the 22d. The liſt was pretty numerous, compoſed of valetudinarians taken from *Mahon* hoſpital, and one or two fevers. Put to hoſpital at *Gibraltar* 14.

(c) This Mr. *Ives* juſtly aſcribes to oranges and apples.

April. The one half of this month was fair, the other half rainy, cloudy, and foggy; but generally warm.

We had ſome, though not many, ill of coughs and colds. One old man died of a fever. Left *Gibraltar* the 6th, carrying along with us all our people from the hoſpital, where they were badly ſupplied with vegetables and freſh meat. We were in hopes of doing better for them at *Liſbon*, or on the coaſt of *Portugal*; where we continued cruiſing all this month.

May. The weather was moderate and warm, without much rain, though ſometimes hazy. Spent this month at ſea.

In the middle and latter end of it, ſeveral were ill of ſcurvies, others of fluxes. We got no refreſhments from the land for the poor people brought from hoſpital. And the ſick muſt have ſuffered much, had not Captain *Watſon* ſupplied them. He cauſed four of his ſheep to be killed for their uſe; and gave up entirely (as indeed was his wonted cuſtom under ſuch diſtreſs) every drop of milk his cow afforded, for their benefit.

June. Boiſterous winds blew continually from the north, which occaſioned very uncomfortable weather at ſea; and kept the air pretty cool, until the 13th we arrived at *Liſbon*, very ill in the ſcurvy (*d*). Here 3 or 4 died of it.

July. We continued at *Liſbon*. All have not yet got free of their ſcorbutic ailments; ſeveral have ſcorbutic fluxes; others have diarrhœas and dyſenteries, without any ſymptoms of the ſcurvy. Towards the latter end of the month, ſeveral were in fevers.

(*d*) This weather muſt have proved very hard upon the weakly men taken from *Gibraltar* hoſpital.

Auguſt

Auguſt. Slight fevers, but eſpecially diarrhœas and dyſenteries, ſtill prevail. Mr. *Mauberty*, our carpenter, died of the dyſentery I called to his aſſiſtance Dr. *Kennedy*, phyſician at *Liſbon*, and Dr. *Lind*, then ſurgeon of the *Kennington*. 22d of this month we left *Liſbon*, and ſailed for *England*. Had then 20 ſick on my liſt.

CHAP. II.

The diagnoſtics, or ſigns.

IN order to obſerve greater accuracy in the deſcription of a diſeaſe attended with ſo many and various ſymptoms, theſe might have been properly enough ranged under three claſſes.

The *firſt*, Containing the moſt common and conſtant ſymptoms; ſuch as may be ſaid to be eſſential to the nature of the malady.

The *ſecond*, Such as are more caſual and accidental; proceeding not ſo much from the genius of the diſtemper, as from the epidemical conſtitution of the air, the ſtate or habit of the body at the time, or from the determination of other cauſes.

And the *third*, Some extraordinary and uncommon ſymptoms, that ſometimes, though but ſeldom, have happened in it; and which occur only in the higheſt and moſt virulent ſtate of this diſeaſe, from the peculiar *idioſyncraſy* of the patient, its combination with other malignant diſeaſes, or from other incidental circumſtances.

But, for the ſake of greater perſpicuity, I chuſe rather to deſcribe the ſymptoms in the order in which they generally appear, and as peculiar to the ſeveral ſtages of the diſeaſe; and ſhall diſtinguiſh, as I go along, thoſe which are more conſtant or eſſential, from the leſs frequent or adventitious.

The firſt indication of the approach of this diſeaſe, is generally a change of colour in the face, from the natural and uſual look, to a pale and bloated complexion; with a liſtleſſneſs to action, or an averſion to any ſort of exerciſe. When we examine narrowly the lips, or the caruncles of the eye, where the blood-veſſels lie moſt expoſed, they appear of a greeniſh caſt. Mean while, the perſon eats and drinks heartily, and ſeems in perfect health; except that his countenance and lazy inactive diſpoſition, portend a future ſcurvy.

This change of colour in the face, although it does not always precede the other ſymptoms, yet conſtantly attends them when advanced. Scorbutic people for the moſt part appear at firſt of a pale or yellowiſh hue, which becomes afterwards more darkiſh or livid *(a)*.

Their former averſion to motion degenerates ſoon into an univerſal laſſitude, with a ſtiffneſs and feebleneſs of their knees upon

(a) Mr. Murray's remark.—They commonly appear of a melancholy and ſullen countenance; ſuch alſo is their diſpoſition of mind. So that dejection of ſpirits may juſtly be reckoned a cauſe as well as ſymptom of the future malady.

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uſing exerciſe; upon which they are apt to be much fatigued, and upon that occaſion ſubject to a breathleſſneſs or panting. And this laſſitude, with a breathleſſneſs upon motion, are obſerved to be among the moſt conſtant concomitants of the diſtemper.

Their gums ſoon after become itchy, ſwell, and are apt to bleed upon the gentleſt friction. Their breath is then offenſive; and upon looking into their mouth, the gums appear of an unuſual livid redneſs, are ſoft and ſpungy, and become afterwards extremely putrid and fungous; the pathognomic ſign perhaps of the diſeaſe. They are ſubject not only to a bleeding from the gums, but prone to fall into hæmorrhages from other parts of the body.

Their ſkin at this time feels dry, as it does through the whole courſe of the malady *(b)*. In many, eſpecially if feveriſh, it is extremely rough; in ſome it has an anſerine appearance; but moſt frequently it is ſmooth and ſhining. And, when examined, it is found covered with ſeveral reddiſh, bluiſh, or rather black and livid ſpots, equal with the ſurface of the ſkin, reſembling an extravaſation under it, as it were from a bruiſe *(c)*. Theſe

(b) Mr. Murray.—Except in the laſt ſtage, when a cold clammy moiſture may be often obſerved on the ſkin, eſpecially if the patient is ſubject to faintings.

(c) Mr. Murray.—The ſkin begins to look in ſpots with a yellow rim. From thence the deepneſs of the dye gradually increaſes, till it becomes of a deep purple, and ſometimes quite black.

ſpots are of different ſizes, from the bigneſs of a lentil to that of a handbreadth, and larger. But the laſt are more uncommon in the beginning of the diſtemper; they being uſually then but ſmall, and of an irregular roundiſh figure. They are to be ſeen chiefly on the legs and thighs; often on the arms, breaſt, and trunk of the body; but more rarely on the head and face.

Many have a ſwelling of their legs; which is firſt obſerved on their ancles towards the evening, and hardly to be ſeen next morning: but, after continuing a ſhort time in this manner, it gradually advances up the leg, and the whole member becomes œdematous; with this difference only in ſome, that it does not ſo eaſily yield to the finger, and preſerves the impreſſion of it longer afterwards than a true œdema.

Theſe are the moſt conſtant and eſſential ſymptoms of this malady in the progreſs of its firſt ſtage. But a diverſity is ſometimes obſerved in the order of their appearance. Thus, when a perſon has had a preceding fever, or a tedious fit of ſickneſs, by which he has been much exhauſted, the gums for the moſt part are firſt affected, and a laſſitude conſtantly attends; whereas, when one has been confined from exerciſe by having a fractured bone, or from a bruiſe or hurt, theſe weak and debilitated parts become almoſt always

ways firſt ſcorbutic *(d)*. As for example, if a patient labours under a ſtrain of the ancle, the leg, by becoming ſwelled, painful, and œdematous, and ſoon after covered with livid ſpots, gives the firſt indication of the diſeaſe. And as old ulcers on the ſkin are very frequent among ſeamen, in this caſe likewiſe the legs are always firſt affected, and theſe ulcers put on the ſcorbutic appearance, although the patient ſeems otherwiſe perfectly healthy, and preſerves a freſh good colour in his face.

The diſtinguiſhing characteriſtics of ſcorbutic ulcers are as follow. They afford no good digeſtion, but a thin, fœtid, ſanious ſtuff, mixed with blood; which at length has the true appearance of coagulated gore lying caked on the ſurface of the ulcer, and is with great difficulty wiped off, or ſeparated from the

(d) Mr. Ives.—As was the caſe of *John Thomas*, marine, belonging to the *Dragon*, who, on the 18th of *Auguſt*, 1742, got, by a muſket-ball from the *Spaniards*, a very bad fracture of the *os humeri*, with great comminution. Eight or ten large pieces of the bone were cut in upon, and taken away, and the bone ſhivered quite to its head. By the end of *November* following, a union was brought about by means of an intervening *callus*, and a ſound ſkin brought over almoſt all the inciſions. He had nearly recovered his fleſh and ſtrength loſt under the diſcharge and confinement, being daily ſupplied with freſh proviſions by the bounty of the officers. Upon the ſcurvy breaking out in *December*, his ſupply of freſh proviſions was ſtopt, and given to more neceſſitous objects, as was thought, he being then pretty healthy. Upon which he fell into a bad ſcurvy: the firſt ſymptom of which that appeared, was the breaking out of the late wounds in his arm. He ſunk under the diſcharge, and died at *Mahon* hoſpital.

parts

parts below. The fleſh underneath theſe ſloughs feels to the probe ſoft or ſpungy, and is very putrid. No detergents or eſcharotics are here of any ſervice: for though ſuch ſloughs be with great pains taken away, they are found again at next dreſſing, where the ſame *ſanguineous* putrid appearance always preſents itſelf. Their edges are generally of a livid colour, and puffed up with excreſcencies of proud fleſh ariſing from below under the ſkin. When too tight a compreſſion is made, in order to keep the *fungus* from riſing, they are apt to have a gangrenous diſpoſition; and the member never fails to become œdematous, painful, and for the moſt part ſpotted. As the diſeaſe increaſes, they at length come to ſhoot out a ſoft bloody *fungus*, which the ſailors expreſs by the name of *bullocks liver*: and indeed it has a near reſemblance, in conſiſtence and colour, to that ſubſtance when boiled. It often riſes in a night's time to a monſtrous ſize; and although deſtroyed by cauteries, actual or potential, or cut ſmooth with a biſtory (in which caſe a plentiful hæmorrhage generally enſues) is found at next dreſſing as large as ever. They continue however in this condition a conſiderable time, without affecting the bone.

The ſlighteſt bruiſes and wounds of ſcorbutic perſons degenerate into ſuch ulcers. Their appearance, on whatever part of the body, is ſo ſingular and uniform, and they are ſo eaſily diſtinguiſhed from all others, by being

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ing ſo remarkably putrid, bloody, and fungous, that we cannot here but take notice of the impropriety of referring moſt of the inveterate and obſtinate ulcers on the legs, with very different appearances, to the ſcurvy; which are generally beſt cured by giving mercurial medicines: whereas that medicine, in a truly ſcorbutic ulcer, is the moſt dangerous and pernicious that can be adminiſtered.

But to proceed: The firſt remark to be made upon this diſeaſe, is, that whatever former ailment the patient has had (eſpecially rheumatic pains, aches from bruiſes, hurts, wounds, *&c.)* or whatever preſent diſorder he labours under; upon being afflicted with this diſtemper, his former and old complaints are renewed, and his preſent malady, whatever it may be, rendered worſe. Scorbutic people, as the diſeaſe advances, are ſeldom indeed free from complaints, eſpecially of pains; though they have not the ſame ſeat in all, and even in the ſame perſon often ſhift their place. Some complain of a univerſal pain in their bones, as they expreſs it; moſt violent in their limbs, and ſmall of the back, and eſpecially on their joints and legs when ſwelled. But the moſt frequent ſeat of their pain is in ſome part of the breaſt; a tightneſs and oppreſſion there, with ſtitches felt upon coughing, being uſual ſymptoms in this diſeaſe. And as ſcorbutic pains in general are very liable to move from one place to another, ſo they are always exaſperated by mo-

tion of any ſort, eſpecially the pain of the back; which, upon this occaſion, proves very troubleſome.

The next thing obſervable here, is, that whatever diſeaſes are epidemical at the ſame time with the ſcurvy, or even whatever intercurrent diſeaſes prevails, theſe ſcorbutical habits are very liable to be ſeized with. And this ſometimes happens when ſuch diſtempers would appear to be of a pretty oppoſite genius to the ſcurvy; in which caſe it is lucky for the patient. But, on the contrary, if the prevailing diſtempers are of a putrid nature, ſuch as the ſmall-pox, meaſles, dyſenteric fever, &c. it is then, that, co-operating with the ſcorbutic acrimony, they produce the moſt fatal and malignant ſymptoms.

I obſerved a conſiderable difference in the genius of the diſeaſe in the two cruiſes *ann.* 1746 and 1747. In the latter, when fevers from cold of the pleuritic and peripneumonic ſort prevailed, it tended chiefly to affect the breaſt with a tightneſs, oppreſſion, and a hard bound cough, by which a very viſcid phlegm was with great difficulty brought up. The fits of coughing were not conſtant, but extremely fatiguing; and this was an univerſal complaint. Several at this ſeaſon were feveriſh; we had none in a ſalivation, and the fluxes were mild and manageable. Whereas in the year 1746, when a different ſpecies of diſeaſes prevailed, occaſioned by the unwholſome

ſome newneſs of the ſhip's timbers, and diarrhœas were frequent, the ſcurvy proved more virulent and fatal. Its worſt, moſt common, and troubleſome ſymptoms, were ſalivations and dyſenteries, eſpecially the latter; in which one *Nichols* died, and eight or ten more were landed at *Plymouth* in a very low and exhauſted condition by it. I did not at that time remark any of them to be feveriſh, and their breaſts were but ſlightly affected. *John Hearn* was our patient in both cruiſes. His caſe begins in my diary, under the 24th of *June* 1746, thus. He had been afflicted with the ſcurvy for ſome time paſt. It firſt appeared with ſore ſpungy gums, pain and œdematous ſwellings of his legs, weakneſs, *&c.* Has taken *elixir vitriol* twice a-day for a conſiderable time, but grows daily worſe. Has a continual ſalivation, at the rate of two quarts in twenty-four hours, attended with ſevere gripes and *teneſmus*. The ſalivation ſoon ſtopt; but was followed with a violent dyſentery, which continued until he was landed. I find him again mentioned under the 15th of *May* 1747. *J. Hearn* complains of a laſſitude and ſtiffneſs of his limbs, with pain in his back. Upon examination, we find his legs covered with red, black, and livid ſpots; his gums are ſwelled; his chief complaint is a troubleſome fatiguing cough. And this laſt was what afflicted him moſt during the whole cruiſe.

I be-

I believe indeed it will univerſally be found, that, in the progreſs of this diſtreſs, the breaſt is always more or leſs affected, unleſs the belly is very open. The pain ſhifts from one part of it to another, often to oppoſite ſides, and is at firſt perceived upon coughing only: but when the malady is farther advanced, it commonly fixes in a particular part, moſt frequently in the ſide; where it becomes extremely ſevere and pungent, ſo as to affect the breathing; a dangerous ſymptom in this diſeaſe *(e)*.

The head is ſeldom or never affected with pain, unleſs the patient is feveriſh. As to fevers, it may indeed be doubted whether there be any ſuch as are purely and truly ſcorbutical; the diſeaſe being altogether of a chronic nature, and fevers may be juſtly reckoned amongſt its adventitious ſymptoms. I have been told by a very intelligent ſurgeon, who has had opportunity of ſeeing ſome hundred ſcorbutical caſes, and thoſe of the worſt kind, that he remarked very few of them to be attended with fevers; which, to the beſt of his remembrance, always proved mortal. And I am convinced, that fevers of any ſort do prove fatal, though

(e) Mr. Murray's remark.—This pain in ſome meaſure anſwers to the deſcription of the *pleuritis notha*; and, like it, is ſometimes, but not always, to be relieved by bliſters: the application of which however is not here ſafe, as there is ſome danger of a gangrene from them. I have likewiſe often obſerved a pain of the breaſt, I think moſtly in the left ſide, in ſcorbutic fluxes, and always found it mortal.

they

they very ſeldom occur, in the laſt ſtage of the malady *(f)*.

I obſerved before, that, in the year 1746, none of our ſcorbutical patients were feveriſh: but, in the cruiſe in the year 1747, ſeveral had the fever in the beginning of the diſtemper. The ſymptoms were not ſo violent nor inflammatory in ſcorbutical people, as in others. In two or three it aſſumed an intermitting form; and in this ſtate I obſerved it to be altogether mild, and without danger.

One *Daniel Harlyhee* having an obſtinate ulcer on his ſhin, his legs, about the beginning of *May* 1747, became painful and œdematous, and his ulcer truly ſcorbutic. On the 12th of that month he was ſeized with a pretty ſmart fever; which abated the next day, but returned regularly every third day for five weeks, till he arrived at *Plymouth*. His gums were putrid; he had a pain in his breaſt, together with a cough, and the other ſcorbutic ſymptoms uſual at that ſeaſon.

(f) Ives.—I cannot ſay I have ever ſeen an inſtance of it: for I do not remember, nor can I find in my journals, one caſe of a perſon advanced in the ſcurvy being ſeized with a fever. I entirely agree with you, that this diſeaſe is purely chronic. Ulcerated lungs is a common conſequence of the ſcurvy; and where there has been a violent cough and ſtitches preceding, 'tis certain I may have perceived the pulſe to have quickened, and poſſibly too an increaſe of heat in the ſkin: yet theſe circumſtances ſeemed to me altogether ſymptomatic, and not properly to be denominated a fever with the ſcurvy; for, after a rupture in the pulmonic texture, the commotion of the blood, and heat of the body, generally ceaſe.

But of all ſpecies of fevers that may be ſuperadded to this diſeaſe, the moſt terrible, more ſo perhaps than even the plague itſelf, is that of the petechial fever, or jail-diſtemper, as it is called; which has ſometimes been contracted in large, crouded, and ſickly ſhips; either from infection, or by keeping ſcorbutical patients long confined in foul putrid air *(g)*.

Laſtly, According to the habit and conſtitution of the patient, there will occur likewiſe ſome little diverſity in the ſtate of the body in this diſeaſe: ſome through the whole courſe of it being regular enough in their belly, while others are apt to be very coſtive; but generally ſcorbutic perſons are inclinable to a looſe

(g) Of this indeed I have never ſeen an inſtance; but have been favoured with the following account of it from Mr. *Murray*, when ſurgeon of the *Canterbury*.

'He obſerved in that ſhip, during an epidemical rage of the ſcurvy, when at the ſame time they had on board ſome petechial fevers, that ſeveral were ſeized with a ſlight fever, which was abated the third or fourth day, upon the appearance of a miliary, eryſipelatous, or herpetical eruption, for the moſt part on the inferior extremities. Theſe eruptions gradually grow livid, from thence black and gangrenous; attended with, or producing ſordid and ſanious ulcers, *ſpinæ ventoſæ*, and *caries* of the moſt obſtinate and dangerous kind; ſpreading always upwards, ſeldom or never downwards. The gums were in this caſe lax, not much ſwelled, but often bleeding; and ſoon attended with *caries* of the jaw, from the ſockets of which the already looſened teeth eaſily dropped out. The patient was continually thirſty; the ſkin dry and hot; the pulſe ſmall and quick; the eyes ſometimes ſtaring, oftener moving quick, and looking wild, with a deſpairing moving aſpect; the tongue moiſt and tremulous; the patient reſtleſs, and ſometimes delirious. This dreaful evil ſoon carried off the unhappy ſufferer, if remedies were not imme-

looſe ſtools at times, which in all are remarkably fœtid. The urine I found to be extremely various at different times, even in the ſame patient; except that it is generally high coloured, and ſoon becomes rank and fœtid *(h)*. The pulſe likewiſe varies according to the habit of the patient, and ſtate of the malady; being moſt commonly ſlower and feebler than when in health *(i)*.

The true ſcorbutic ſpots, as was ſaid before, are always flat, and equal with the ſurface of the ſkin. I have, however, obſerved the legs, at the ſame time when greatly ſwelled, ſometimes covered with a dry ſcurf or ſcales. At other times, though very rarely, there appear on the ſkin ſmall eruptions of the dry miliary kind.

immediately adminiſtered; or rather Nature had not ſtrength enough to diſburden herſelf upon ſome of the extremities, eſpecially the inferior, as before remarked, generally a little below the knee; where carious or cancerous ulcers made quick ravage, were attended with the moſt exquiſite pain, and often quickly diſpatched the patient, bleſſing him with death.

(h) Mr. Murray's remarks.—The urine of almoſt all ſcorbutic perſons, when let ſtand, gathers an oily ſaline ſcum atop.

(i) Mr. Murray.—Where there is fever, the pulſe is generally ſmall, but hard and quick. You ſay, that *Eugalenus*, and the authors who have followed him, tell us, that in ſcorbutic faintings, the pulſe riſes and becomes ſtronger. This ſingularity, I think, I muſt have obſerved, had it been ſo. In ſuch caſes the pulſe is for moſt part obſcure and ſmall; ſometimes riſing all of a ſudden for a few ſtrokes, ſoon ſinking, and always intermitting. In the fever mentioned, unleſs a flux accompanied it, faintings were leſs frequent: the pulſe was quick and ſerrated, and ſometimes run like quick-ſilver in a flexible tube, puſhed along by ſtarts.

In the ſecond ſtage of this diſeaſe, they moſt commonly loſe the uſe of their limbs; having a contraction of the flexor tendons in the ham, with a ſwelling and pain in the joint of the knee. Indeed a ſtiffneſs in theſe tendons, and a weakneſs of the knees, appear pretty early in this diſeaſe, generally terminating in a contracted and ſwelled joint. They are ſubject to frequent languors; and when long confined from exerciſe, to a proneneſs to faint upon the leaſt motion of the body; which are moſt peculiar, conſtant, and eſſential ſymptoms of this ſtage.

Some have their legs monſtrouſly ſwelled, and covered with one or more large livid ſpots, or *ecchymoſes*; others have hard ſwellings there in different places, extremely painful; and others I have ſeen, without any ſwelling, have the calf of the leg *(k)* quite indurated.

They are apt, upon being moved, or expoſed to the freſh air, ſuddenly to expire. This happened to one of our people, when in the boat, going to be landed at *Plymouth* hoſpital. It was remarkable he had made ſhift to get there without any aſſiſtance, while many others were obliged to be carried out upon their beds. He had a deep ſcorbutical colour in his face *(l)*, with complaints in his

(k) Mr. Ives.—And thighs too.

(l) Mr. Murray's remark.—In this ſtage I have ſeen livid *maculæ*, or ſpots, on the face.

breaſt.

breaſt. He panted for about half a minute, then expired *(m)*.

Scorbutic people are at all times, but more eſpecially in this ſtage, ſubject to profuſe hæmorrhages from different parts of the body; as from the noſe, gums, inteſtines, lungs, *&c.* and from their ulcers, which generally bleed very plentifully. Many at this time are afflicted with violent dyſenteries, accompanied with exquiſite pain; by which they are reduced to the loweſt and moſt weakly condition: while others I have ſeen, without a diarrhæa or gripes, diſcharge great quantities of pure blood by the *anus*.

The gums are for the moſt part exceſſively fungous, with an intolerable degree of ſtench, putrefaction, and pain; ſometimes deeply ulcerated, with a gangrenous aſpect. But I never remarked, except in caſes of ſalivations, the back part of the throat, or upper part of the mouth, much affected; and I believe the lips ſeldom or never are. The teeth moſt commonly become quite looſe, and often fall out; but a *caries* of the jaw does but rarely follow.

Upon this occaſion it muſt be noted, that a ſcorbutic *caries* happens only in two caſes. *Firſt*, If the outer *lamella* of a bone has been broken off, ſo as that the ſcorbutic corroſive

(m) Mr. Ives.—Of this I have ſeen many inſtances, when they are imprudently brought up from the orlope to the freſh air. The utmoſt caution and circumſpection are here requiſite.

humour, ſtagnating in any of the cavities of the body, has acceſs to the internal cellular ſubſtance, it ſpeedily corrupts and gangrenes it. But otherwiſe ulcers continue long on the ſpine of the *tibia*, and other parts, without affecting the bone; except in another and rare caſe; which is, when, by the deepeſt and moſt virulent infection, this cellular ſubſtance becomes tainted; which is commonly attended with excruciating pain, and always with an enlargement of the bone, or rather an *exoſtoſis*, often the *ſpina ventoſa*, followed with painful ſpreading ulcers, and an internal *caries* of the moſt malignant kind *(n)*.

Moſt, although not all, even in this ſtage, have a good appetite, and their ſenſes entire, though much dejected, and often low-ſpirited. When lying at reſt in their beds, many make no complaint, either of pain or ſickneſs, unleſs afflicted with the dyſentery, or a troubleſome ſalivation. This laſt indeed I am inclined to think would happen but ſeldom, were it not occaſioned by the exhibition of ſome mercurial medicine *(o)* in the cure of ulcers,

(n) Mr. Murray.—I never obſerved a carious bone to follow, but where there was a fever and moſt virulent ſcurvy.

(o) Mr. Ives.—Did you in 1746, exhibit mercurials? If not, how do you account for the ſalivations that happened then? They would appear to me to have been purely ſcorbutic. I do not remember an inſtance of any conſiderable ſalivation in the ſcurvy. *Anſwer.* It appears from my diary, that we had then three patients in a ſalivation, *viz. Rice Meredith, Robert Robinſon,* and *John Hearn.* The two firſt had taken gentle doſes of *mercurius alcaliſatus.* and about half a dram

ulcers, or other ſcorbutical complaints, where it is often injudiciouſly adminiſtered; which, in ſuch caſes, in extreme ſmall quantity, induces a copious and dangerous ſalivation, almoſt always attended with the dyſentery. Theſe ſucceed each other alternately; ſo that the ſpitting generally ceaſes for a day or two, while the patient is racked with gripes, and bloody ſtools; which being ſtopt for a little, the ſalivation again returns.

It is not eaſy to conceive a more diſmal and diverſified ſcene of miſery, than what is beheld in the third and laſt ſtage of this calamity; it being then that the anomalous and more extraordinary ſymptoms moſt commonly occur. It is not unuſual at this time, for ſuch perſons as have had ulcers formerly healed up, to have them break out afreſh: while in others the ſkin of their ſwelled legs often burſts, particularly where ſoft, painful, livid ſwellings, have been firſt obſerved; and theſe degenerate into ſuch crude, bloody, fungous ulcers, as formerly deſcribed. Some few at this period (though very rarely) fall into colliquative putrid fevers, attended almoſt always with *petechiæ*, fœtid ſweats, *&c.* or rather ſink under profuſe evacuations of rotten blood, by ſtool and urine, from the lungs, noſe, ſtomach, hæmorrhoidal veins, *&c. (p)*: while the diſeaſe more frequently

a dram of mercurial pill, but there is no mention of their having been given to *Hearn.* I am pretty clear he took no mercury.

(p) Ives.—All which I have often ſeen, except the fever.

in others, by occaſioning obſtructions and putrefaction in the abdominal *viſcera*, gives riſe to a jaundice, dropſy, and the *affectio hypochondriaca*, or the moſt confirmed melancholy and deſpondency of mind, attended with ſevere nervous rigors; as alſo to violent colics, obſtinate coſtiveneſs, *&c.* The termination of this diſeaſe in a fatal dropſy is very uſual; the *hydrops pectoris* and *aſcites* are moſt frequent; the *anaſarca* and *hydrocele* more rare.

Towards the cloſe of this malady, the breaſt is moſt commonly affected with a violent and uneaſy ſtraitneſs and oppreſſion, and an extreme *dyſpnœa*; accompanied ſometimes with a pain under the *ſternum*, but more frequently in one of the ſides: while others, without any complaint of pain, have their reſpiration become quickly contracted and laborious, ending in ſudden, and often unexpected death.

Many more ſymptoms might be here added that at times have been obſerved, eſpecially towards the cloſe of this moſt virulent diſeaſe. And we ſhall have no occaſion to be ſurpriſed, even at the moſt extraordinary which have been related by authors, when we come, in its proper place *(q)*, to view the true ſtate of the body at this period, with the high degree of putrefaction in the blood, the other humours, and *viſcera*.

(q) Chap. 7. Diſſections.

I have

I have been told by ſome practitioners, that this is a diſeaſe not met with in people living at land in *Great Britain*. To ſuch gentlemen I would recommend the ſerious peruſal of an excellent chapter *(r)* in Dr. *Huxham*'s late eſſay on fevers, where they will be made better acquainted (as is very neceſſary) with what is truly the ſcorbutic *diatheſis*. Whatever number or diverſity of ſymptoms may occur in this evil, from difference of conſtitution, and eſpecially at ſea, from the influence of ſuch powerful cauſes as ſubſiſt there; yet putrid gums, bluiſh and black ſpots on the body, conſtitute its characteriſtic and pathogmonic ſigns every where.

As the before-mentioned learned author, my honoured friend, has publiſhed ſeveral very curious and truly ſcorbutical caſes which occurred in *England*; I ſhall conclude this chapter, after giving ſome caſes communicated to me, more out of the common road, with an account of ſeveral ſcurvies in *Scotland*.

(s) "Since the firſt edition of your treatiſe was publiſhed, I have met with two "remarkable inſtances of fevers preceding "ſcurvies ſo cloſely, that the latter ſeemed "to prove a *criſis* to the former. One was "a young lady who had long laboured under ulcers of the legs; theſe being dried "up, ſhe after catching a ſevere cold, was "ſeized with a peripneumony and delirium;

(r) Chap. 5. on the putrid and diſſolved ſtate of the blood.
(s) Extract of a letter from Mr. *Murray*.

"upon

" upon the criſis of which by ſweat, her de-
" lirium went off, and of a ſudden her gums
" ſwelled, all her teeth became looſe, and
" her muſcles of maſtication were ſo con-
" tracted and tenſe, without any remarkable
" ſwelling, that ſhe could neither move her
" jaw, nor ſwallow but with the utmoſt diffi-
" culty. The fever immediately diſapeared;
" and having by proper gargles, fomenta-
" tions, *&c.* abated the ſeverity of the ſymp-
" toms, orange-juice, with a decoction of the
" bark, effected the cure. The other was
" a young man ſeized with the ſymptoms
" of an inflammatory quinſy, where the fever
" ran ſo high, that I was obliged to make
" copious and repeated evacuations by bleed-
" ing, purging, bliſtering, *&c.* The fever
" abated on the fourth day, as alſo the pain
" in his throat; but he complained of a ſore
" mouth, and that he had a raſh come out
" on his legs. Looking into his mouth I
" found his gums looſe and flabby, and his
" breath remarkably fœtid, and upon his legs
" the true *maculæ ſcorbuticæ.* I ordered
" him a gargle of *tinct. roſar & tinct. myrrh.*
" edulcorated with *mel roſar.* and directed
" him to eat a *Seville* orange or two every
" day, which cured him in a ſhort time.
" Both theſe caſes occured in the ſpring
" 1754, when I remarked the ſcurvy more
" epidemical here at *Wells*, than I ever knew
" it at land. It chiefly affected thoſe who
" lived in moiſt damp places, and was doubt-

" leſs

" leſs rendered more frequent by the extra-
" ordinary moiſture, coldneſs, and back-
" wardneſs of that ſpring ſeaſon."

(t) Lieutenant *John A*—— of marines, aged 40, was formerly extremely healthy, though much at ſea; where he had ſeldom or never eat of ſalt proviſions, officers tables being generally well provided with better fare. He had lately returned from ſome *Channel* cruiſes to the weſtward; where, as uſual, he had not eat of any thing ſalt, having a natural averſion to ſuch food. One day, to his great ſurpriſe, he obſerved about the middle of one of his legs a conſiderable bunching up from from over the *tibia*; and, taking down his ſtocking, found a bluiſh inſenſible ſwelling. Next morning it was increaſed to the ſize of a large walnut; and in two or three days the ſkin broke, and it became a genuine ſcorbutic ulcer, with the liver-like *fungus*. After which began alſo other ſymptoms; change of colour, tightneſs in the breaſt, rotten gums, and, what was very threatning to his life, an obſtinate conſtipation of the bowels, attended with intolerable gripings.

He took country-lodgings; and, being properly treated, in about ſix weeks, or two months, recovered.

(t) Communicated by Mr. *Ives*.

Letter

Letter from Dr. JAMES GRAINGER *(u), phyſician in* London, *late ſurgeon to Lt-Gen.* Pulteney's *regiment.*

I Have extracted from my notes the following brief deſcription of the ſcurvy, which prevailed *ann.* 175$\frac{1}{1}$, among the ſix companies of our regiment quartered at *Fort-William.*

I had then an opportunity of ſeeing it in near 100 patients; and muſt ingenuouſly own, it was there I learned my firſt leſſon upon the diſeaſe.

My predeceſſor had not informed me, that this was a diſorder of that garriſon; it was a ſubject of which I had read much, but knew little; ſo that the firſt I treated, had well nigh fallen a martyr to improper preſcription. The pains the ſoldier complained of, appeared to me rheumatic. This I the more eaſily gave into, as at that time this diſeaſe was actually frequent. He was bled, and treated accordingly; upon which his pains grew worſe than ever, and no wonder. I began to talk ſeriouſly to him, and upbraided him with having pretended complaints more than real. But he ſoon gave me evident marks of genuine diſtreſs. Livid ſpots on the thighs, rotten, bleeding gums, and his ſtinking breath, quickly convinced me, that I had

(u) The ingenious author of *Hiſtoria febris anomal. Batav. ann.* 1746, *&c.*

miſtaken his caſe, and conſequently the method of cure.

At aliquis malo fuit uſus in illo.

The ſcurvy now began to ſpread, and I profited by my former inattention.

Its firſt appearances were, *laſſitudo*, breathleſſneſs upon the leaſt quickneſs of motion, and a taſte in the mouth peculiarly diſagreeable: theſe were ſoon followed by rotten, ſpungy, painful gums, bleeding from the ſlighteſt touch; fœtid breath; pains always of their thighs, frequently of their legs, ſometimes of their loins, ſeldom of their arms. All theſe parts were ſometimes diſcoloured with purple *maculæ*, which, as the malady increaſed, grew black and broad. The anterior parts of the legs and thighs chiefly ſuffered. The former I have ſeen all livid, the latter very cloſely ſpotted. Neither were much ſwelled, yet both were harder than uſual; and ſo extremely painful, that the gentleſt touch gave agony. Unleſs theſe were ſpeedily checked, the contagion ſpread, their faces grew ſtrangely ſallow, their teeth looſened, palate and *fauces* ulcerated, aſthma increaſed; they fell away, ſlept little, old ulcers broke out again, they cried out when turned a-bed, and ſometimes fainted upon motion of their body.

What ſurpriſed me moſt, was, that their appetite, even in theſe deplorable circumſtances, was not greatly impaired; and that none

none of them could properly be ſaid, though thirſty, to be in a fever. All of them were rather coſtive; and their urine, though not copious, was always vaſtly fœtid and thick, in thoſe eſpecially who complained of their loins. Moſt of them were continually ſpitting; and a ſmall quantity of mercury occaſioned a dreadful ſalivation.

A ſoldier who laboured under the venereal diſeaſe, with a ſcorbutical diatheſis, uſed but a dram of crude mercury, by way of unction, one evening. Next morning I found him in a true mercurial ſalivation. The ſpitting went on, increaſing until the tenth day; when the inſide of his mouth, lips, and cheeks, became monſtrouſly ſwelled. The ſtench of his mouth was intolerable to all about him. He every day ſpit out a quantity of fœtid blood, part of his gums, and teeth. He loſt almoſt all the latter; and what was very remarkable, they were found preternaturally enlarged. His urine was extremely fœtid, thick, and almoſt blackiſh. He often fainted away. In ſhort, the poor fellow was reduced to the moſt deplorable condition, and with great difficulty eſcaped. It was three months afterwards before he was fit for duty *(u)*.

The ſcurvy began in *March*, raged in *April*, declined in *May*, and left us before the middle of *June*. Ninety during that period had ſcurvies at *Fort-William*; while there were only two ſoldiers out of four companies ſeiz-

(u) Vid. *Monita Siphylica*, auct. Jac. Grainger, p. 4.

ed

ed with it at *Fort-Auguſtus*, and but one in a Captain's command at the barracks of *Bernera*. Theſe three indeed were very bad. No officer had it in any of theſe garriſons.

I imputed the malady to the following cauſes. 1*mo*, Conſtant moiſt, rainy weather. 2*do*, Salt proviſions from *December* till near the end of *May*, ſalt butter, cheeſe, oat-meal. 3*tio*, Few or no vegetables; little, bad, or no milk. 4*to*, Indifferent weather. 5*to*, Hard duty. The 1ſt, 3d, 4th, 5th cauſes prevailed leſs at *Fort-Auguſtus* and *Bernera*; and therefore theſe places had not their proportion of ſcorbutic patients.——*(w)*.

This diſeaſe is in ſeveral parts of *Scotland* called by the name of the *black legs*. It has often been very epidemic and fatal to the miners at *Strontian* in *Argyleſhire*. Not long ago many of them died of it, with this remarkable ſymptom, that the hypochondria and lower belly were at length covered with large ſcorbutic *maculæ*. This *Dodonæus (x)*, a good author on the ſcurvy, long ago obſerved to be a mortal ſymptom.

I am informed of a certain noble family, whoſe ſeat in the country is bleak, and expoſed to the ſea, where they have been univerſally afflicted with ſpungy, rotten gums, ſwelled legs, ulcers, *&c.*

Lately a gentleman confined in jail at *Edinburgh*, complained of a ſwelling of his legs.

(w) See the remainder of this letter, chap. 5.
(x) Vid. Part 3.

Upon examination, they were found covered with black and bluiſh ſpots; ſoon after his gums became extremely putrid and fungous. His caſe being neglected, a *caries* of the lower jaw enſued; for which he was put under my care.

A navy-ſurgeon reſiding in *Fife*, in paſſing by *Backhaven*, was deſired to viſit two poor fellows who were extremely bad. He found them in a miſerable condition indeed! Their gums were monſtrouſly putrid, their bodies ſpotted, and they were altogether deprived of the uſe of their limbs, by a ſwelling in the joint of the knee; in one of them the tendons in the ham were contracted, and quite indurated. The gentleman acquainted them with the nature of their malady, and by a proper preſcription reſtored them ſoon to health *(y)*.

I have been favoured with ſeveral letters by different gentlemen, giving an account of the unlucky and ſometimes fatal errors they have fallen into by miſtaking this diſeaſe. But as I chuſe now rather to publiſh my own faults than the misfortunes of others, I muſt ingenuouſly own (hoping it may perhaps be for the future benefit of practitioners) that before I had learned the nature and ſymptoms of this malady from obſervation, two patients fell under my cure; in one of whom the diſeaſe proved fatal, and in the other extremely tedious, owing in all probability to improper

(y) See the preſcription, chap. 5.

treat-

treatment. At leaſt were ſuch caſes to occur to me at preſent, I would treat them in a very different way.

A gentleman, after a tedious ſalivation, in which he had uſed a large quantity of mercury, was reduced to great weakneſs of body, and affected with a tremulous diſorder of his limbs, for which he took ſeveral doſes of prepared crude antimony. Though ſeemingly much mended in his health and looks, he ſoon after became afflicted with œdematous ſwellings on his legs; and as his teeth had not been faſtened, ſeveral of them dropped out. He was put upon a coarſe of reſtoratives, *viz.* a bitter ſteel-wine with an electary of the *bark* and *gum guajac.* After uſing them for ten days he fell into a *diarrhœa*, upon which account they were laid aſide, and aſtringents with *el. vitrioli* preſcribed. Soon after this, the tendons in the ham became ſo rigid, that his legs were bent quite back, and in this pitiful condition he was deprived of the benefit of all exerciſe. When the flux had left him, recourſe was again had to his former reſtorative medicines. Embrocations, ſteams, and fomentations were uſed to his contracted joints, but all to no purpoſe. At this time the putrefaction in the mouth was ſo great, that a *caries* of the jaw was ſuſpected. The diſeaſe ſtill gaining ground, he was ſuddenly ſeized with a large watery ſwelling of the *ſcrotum*, a hardneſs and fullneſs of the *abdomen.* An infuſion of *ſem ſinap. m. moſchat.*

and *ſal. abſinth* in white-wine was adminiſtred. Various other unſucceſsful methods were tried, but he died in about three months, after his having been firſt afflicted with the ſcurvy.

Another patient, who had kept the houſe for ſome days with a ſevere cough and pectoral diſorder, was, upon theſe complaints leaving him, ſeized with rheumatic pains in his arms and legs, being otherwiſe in perfect health. He took ſeveral *boluſes* of *g. guajac.* and *theriac.* at bed-time, without any ſenſible relief; and for a conſiderable time thirty drops of *ol. tereb.* three times a day; and afterwards half a drachm of *flor ſulph.* twice a-day: notwithſtanding which the pains encreaſed, and became more univerſal. He at length obſerved his ſkin all over ſpotted. The ſpots were of a purple colour, and became daily more numerous; the pains in ſome parts were relieved by the eruptions, but he now complained much of an univerſal wearineſs and greater pains in his joints. He underwent a courſe of *æthiops mineral* and *g. guajac* with *decoct. lignor.* Bliſters were applied to his joints. A new ſymptom appeared, *viz.* a ſort of ſpurious dyſentery. He afterwards became greatly dejected in mind, and was ſubject to faintings. All this time the ſcorbutic ſpots continued out upon his body. Another perſon being upon this occaſion conſulted, the caſe was pronounced to be nervous. *Caſtor. ſal. C. C.* cephalic pills, *tinct. ſacra, epiſpaſtics, &c.* were preſcribed without

out procuring more than a temporary relief. At laſt upon hearing ſome unexpected good news, which obliged him to go into the country, he found himſelf conſiderably relieved; and after having undergone a very tedious courſe of medicines, was ſoon recovered by change of air, proper exerciſe, drinking of whey, and taking a gentle laxative when needful.

Extract of a letter received from Dr. Huxham, *phyſician in* Plymouth, *ſince the foregoing ſheets were printed off.*

IN anſwer to your queſtion, whether we meet with many truly ſcorbutic caſes in *Devonſhire* and *Cornwall*, amongſt thoſe who conſtantly live at land, I aſſure you we meet with very many patients of that kind, and even of ſuch as are deeply afflicted with it, eſpecially in low marſhy grounds, and ſituations nearly bordering on the ſea, or the *æſtuaria*. A very great number in particular are conſtantly found at *Dartmouth*, it lying exceedingly low, damp, and cold, and very little favoured with the ſun, eſpecially in the winter months; as alſo at *Lowe* and *Foy* in *Cornwall* we are in pretty much the like ſituation. In theſe places the ſcurvy is as it were *endemic* from the lower degrees of it, *viz.* puſtular eruptions, itching ſpungy gums, ſallow complexion, laſſitude and inactivity, weak pulſe, black and blew ſpots up and down the

arms, legs, thighs, *&c.* a foul greaſy urine loaded greatly with ſalino-ſulphureous ſalts, to its greateſt degree of virulence, accompanied with fungous, livid, bleeding gums, horribly ſtinking breath, a ſallow bloated countenance, vaſt dejection of ſpirits and faintings, a tumid *abdomen*, *tormina*, dyſentery, profuſe hæmorrhages from various parts, a difficulty of breathing, eſpecially upon the leaſt motion, very large black, blew, yellow *vibices*, ſwellings, contractions, and ſtiffneſs of the lower limbs, and ſordid, ſpungy, livid ulcers on the legs, *&c.* with a load on the *præcordia*, and an anxiety ſcarce to be expreſſed.

I find this diſorder chiefly among thoſe who drink heavy fulſome malt liquors, ſuch as we generally have in this country, who eat very few vegetables, and live moſtly on fleſh and fiſh, eating them not only at dinner but ſupper; that lead inactive lives, and indulge too much in eaſe and appetite: nay, many of our ſedentary tradeſmen very often fall into it, when they conſtantly drink the groſs ale and beer of this country, and live chiefly on fiſh and ſalt proviſions. On the contrary, the active, laborious huſbandman, who drinks chiefly cyder, eats much herbage, fruits, *&c.* and breathes a free, open, country air, ſeldom or never is affected with it.

I have lately met with two ſcorbutic caſes, which I beg leave here to ſend you.

A young clergyman by intemperance, great irregularities, and a very ſedentary life, contracted

tracted a highly ſcorbutic habit of body, with ſome degree of a jaundice. He had ſpungy bleeding gums, a moſt nauſeous breath, a great number of puſtles, and of black and livid ſpots all over his body, particularly on his arms, thighs, and legs. His legs were ſwelled, and on one of them was a ſordid ſanious ulcer. He had frequent *tormina*, and now and then bloody ſtools. The abdomen grew hard and tumid; he breathed with difficulty on the ſlighteſt motion, and ſometimes fell into a *deliquium*. He bled often profuſely from his noſe, and many days before his death, a bloody fœtid *ichor* leaked continually from his gums and mouth. But what is very ſingular, and for which I mention the caſe, was, that three or four times a ſmall ſtream of blood, not much bigger than a large horſe-hair, burſt out from the ſound ſkin of his arm and hand, and twice from the palm of his hand, which ſquirted out to the diſtance at leaſt of two or three feet, and was with difficulty reſtrained by a very able ſurgeon. He ſtunk ſo much before he died, that the laſt time I viſited him, I could ſcarce bear the ſtench of the chamber, though not a ſmall one.

The other was a gentleman of fortune and family, who had long indulged to the utmoſt intemperance; and yet ſcarce uſed any exerciſe, ſeldom going abroad even in his coach above four or five times a year. He always

delighted in very high ſeaſoned meats; and in a very aſtoniſhing manner for two or three years before his death, would frequently ſwallow large quantities of the common volatile ſalts, as other people would candied carraways. The conſequence was, a hectical diſorder, a vaſt eruption of puſtles, black and blew ſpots and *vibices* all over his body, which cauſed a conſtant and intolerable itching, and by ſcratching continually, he tore his ſkin in a moſt ſhocking manner. He loſt every tooth in his head, and his gums were deſtroyed and waſted quite to the jaw-bone. He had always a ſallow and ſometimes an icteric colour in his face, breaſt, *&c.* His urine was in ſmall quantity, and exceedingly high coloured, as if ſome portion of blood and ſoot had been diſſolved in it, with a great greaſineſs on the top, and ſometimes a film of all the colours of the rain-bow. His legs ſwelled conſiderably, his *abdomen* became very tenſe, and his breath ſhort. His breath was very highly offenſive, and his tongue always foul. He was often ſeized with ſudden and great faintneſs. He at length died in the higheſt degree of a *maraſmus*, having his noſe and knees bent, and fixed together like as a crooked ſceleton, for ſome weeks before his death. He indeed lived a year or two longer than I thought he could have done under ſuch a highly ſcorbutic rotten ſtate: but I am perſwaded, that his drinking very freely of the

fineſt wines, and taking largely of the anti-ſcorbutic juices, greatly contributed to prolong his life. He was upwards of 60 when he died.

CHAP. III.

The prognoſtics.

FOR the better underſtanding of this, and ſome of the following chapters, it becomes neceſſary to make a diſtinction, which is to be attended to. It is, That this diſeaſe may be either adventitious, or conſtitutional; artificial (if I may be allowed the term) or natural to the patient. The firſt is the caſe of moſt ſeamen, and of all ſound conſtitutions, either at ſea or land, who have contracted the taint from ſuch obvious external cauſes as were before-mentioned *(a)*; in whom it is an artificial or adventitious diſeaſe. But there are likewiſe many to be met with, living at land, who, from very ſlight cauſes, are liable to become ſcorbutic; and that from a certain indiſpoſition of their own body: and in ſuch the malady is to be deemed conſtitutional, or natural to the patient. Though in whatever manner it is induced, the diſtemper is ſtill the ſame, and the like method of cure is proper for its removal; ſo I ſhall have no occaſion to mention this diſtinction again; but am here to advertiſe the reader, that ſe-

(a) Part 2. chap. 1.

veral of theſe prognoſtics are chiefly applicable to the artificial ſcurvy.

Perſons who have been weakened by other preceding diſtempers, ſuch as fevers or fluxes; or by tedious confinement and cures, as thoſe who have undergone a ſalivation, are of all others moſt ſubject to this diſeaſe. Intermitting fevers in a particular manner diſpoſe the conſtitution to it.

Thoſe who have formerly been afflicted with it, are much more liable to it, in parallel circumſtances, than others.

Different ſeaſons variouſly affect ſcorbutic ailments. At land they become troubleſome, when the winter's rain and cold begin to ſet in towards the autumnal equinox; cold, moiſt, open winters greatly inforce the diſeaſe; but by the return of warm dry weather, theſe ſcorbutic complaints are much mitigated.

Where the indiſpoſition is but beginning, and even when the gums have been pretty much affected, there are numerous inſtances of a perfect recovery, without having the benefit of freſh vegetables; provided the patient is able to uſe due exerciſe. But when confined to bed, or prevented from uſing exerciſe, by ſwelling of the legs, weakneſs, or from other cauſes, the evil, where no green vegetables or fruits can be procured, infallibly increaſes; and when it is advanced to what I have called the *ſecond ſtage*, is not to be cured without them. Of which many inſtances might

might be produced, particularly from the hoſpital at *Gibraltar*; where ſeveral died moſt piteous objects in this diſtreſs, notwithſtanding they had the benefit of the land-air, and plenty of excellent freſh fleſh-broths; when a ſmall quantity of greens every day, would in all probability have ſaved their lives.

This diſeaſe, when adventitious, may in its firſt, or even its ſecond ſtage, be cured by freſh greens and proper treatment (eſpecially by the uſe of oranges and lemons) on board a ſhip, either in harbour or at ſea.

The ſymptoms related to occur in the laſt ſtage, are of all others the moſt dangerous; *viz.* oppreſſion on the breaſt, obſtinate coſtiveneſs, ſtitches in the ſide, and frequent faintings; but eſpecially great difficulty of breathing.

At ſea, where no greens, freſh meats, or fruits are to be had, the prognoſtics in this diſeaſe are ſometimes deceitful; for perſons that appear to be but ſlightly ſcorbutic, are apt to be ſuddenly and unexpectedly ſeized with ſome of its worſe ſymptoms.

Their dropping down dead upon an exertion of their ſtrength, or change of air, is not eaſily foretold; though it generally happens after a tedious confinement in a foul air.

The firſt promiſing appearance in bad caſes, when fruits or greens are firſt allowed, is the belly becoming lax; theſe having the effect of very gentle phyſic: and if in a few days the ſkin becomes moiſt and ſoft, it is an infallible

ſign

ſign of their recovery; eſpecially if they bear gentle exerciſe, and change of air, without being liable to faint. If the vegetable aliment reſtores them in a few days to the uſe of their limbs *(b)*, they are then paſt all danger of dying at that time of this diſeaſe; unleſs afflicted with the ſcorbutic dyſentery, or the pectoral diſorder. Theſe two often prove fatal, and are the moſt obſtinate to remove of all the ſcorbutic ſymptoms.

The blackneſs of the ſkin, or ſpots, upon recovery, go off nearly in like manner as other *ecchymoſes*, growing gradually yellow, from the circumference to the center; the natural colour of the ſkin returning in the ſame manner.

A deep ſcorbutical taint, where the breaſt has been much affected, often ends in a conſumption. Others have contracted a dropſical diſpoſition from this diſeaſe; or, what is more frequent, ſwelled œdematous, and ulcerated legs. Such perſons are likewiſe ſubject, in different periods of their life afterwards, to chronic rheumatiſms, pains and ſtiffneſs in their joints; and ſometimes to cutaneous eruptions, or a foulneſs of the ſkin *(c)*.

CHAP.

(b) Mr. Ives.—The contraction of their knees ſometimes can never be cured; as happened to one of our marines, *Samuel Norton*, who, although he recovered from the other ſymptoms of a deep ſcurvy, yet never did of this contraction; and upon that account was diſcharged as an invalid from the ſervice, with his heel almoſt touching his buttock.

(c) Mr. Murray's remark.—The gums eſpecially are left conſiderably affected, either by being eat away, and leaving the

CHAP. IV.

The prophylaxis, *or means of preventing this diſeaſe, eſpecially at ſea.*

FOR the prevention of this diſeaſe at land, a warm, dry, pure air, with a diet of eaſy digeſtion, conſiſting chiefly of a due mixture of animal and vegetable ſubſtances (which is found to be the moſt wholſome food, and agreeable to the generality of conſtitutions) will for the moſt part prove ſufficient.

Thoſe who are liable to it by living in marſhy wet ſoils, and in places ſubject to great rains and fogs; and others who inhabit unwholſome damp apartments, as the lower floors and cellars of a houſe in winter, ſhould remedy theſe inconveniencies by keeping conſtant fires, to correct this hurtful moiſture; which will ſtill prove more effectual for the purpoſe, if made of aromatic woods. But it is rather adviſeable for perſons threatened with this malady, to remove into dry, chearful, and better-aired habitations. Their principal food in ſuch a caſe ſhould be broths made of freſh fleſh-meats, together with plenty of recent vegetables, if they can be procured; otherwiſe of preſerved roots and fruits. Their bread ought to be made of wheat-flour, ſufficiently leavened, and well baked; and at their

the teeth too bare; or remaining lax, and covering too much of them; and being ſubject to bleed on the ſlighteſt touch.

meals

meals they are to drink a glaſs of good ſound beer, cyder, wine, or the like fermented liquor. The obſervance of theſe directions, together with moderate exerciſe, cleanlineſs of body, and contentment of mind, procured by agreeable and entertaining amuſements, will prove ſufficient to prevent this diſeaſe from raiſing to any great height, where it is not altogether conſtitutional.

In towns or garriſons when beſieged, officers ſhould take care that the beds, barracks, and quarters for the ſoldiers, be kept dry, clean, and warm, for their refreſhment when off duty; and that their men be ſufficiently provided with thick cloaks and warm cloaths, for ſhelter againſt the inclemency of cold, and rains, when neceſſarily expoſed to them. The ammunition-bread ſhould be light, and well baked, and their other proviſions as ſound and wholſome as poſſible. To correct the too groſs and ſolid quality of theſe, they would do well to join vegetables, even the moſt common, and ſuch as are to be met with on the ramparts, with their other food. This precept becomes ſtill more neceſſary, when the garriſon's proviſions in ſtore are ſpoiled or unſound; in which caſe the uſe of vinegar is recommended by ſeveral authors. *Bachſtrom*'s advice, of ſowing the ſeeds of the antiſcorbutic plants *(a)*, ſo that theſe may grow up with the graſs on the ramparts, will, upon this occaſion, be found very beneficial. They can

(a) Vid. Obſervationes circa ſcorbutum, &c. p. 36.

indeed

indeed be under no difficulty in procuring ſome of the moſt ſalutary of them at all times, if they are provided with their ſeeds, ſuch as the garden-creſſes; which, in a few days, even in their apartments, will ſupply them with a freſh antiſcorbutic ſalad. When the army is in the field, they generally meet with ſuch plenty of wholſome vegetables, as are ſufficient to prevent this diſeaſe becoming fatal to many of them, except in deſert and depopulated countries.

But the prevention of this calamity at ſea, and the preſervation of a truly valuable part of mankind, *viz.* the ſeamen of all nations, from its fatal and deſtructive malignity in long voyages and cruiſes, is what in a particular manner demands our attention, and has exerciſed the genius of ſome of the moſt eminent phyſicians in all parts of *Europe* for above a century paſt.

A *German* who had acquired a conſiderable fortune in the *Eaſt-Indies*, by being *Dutch* Governor of *Sumatra*, was ſo affected with pity and humanity for the many afflicted ſailors he had obſerved in this malady, that, imagining the art of chemiſtry, which at that time made a great noiſe in the world, might probably furniſh ſome remedy for their relief, he erected and endowed a perpetual profeſſorſhip of that ſcience at *Leipſic*. He nominated his countryman Dr. *Michael*, a very great chemiſt, who was the firſt univerſity-profeſſor of chemiſtry in *Europe*; and remitted

ted him a conſiderable ſum of money, in order to bear the expence of his experiments, with a promiſe of a much greater, in caſe he ſucceeded in the diſcovery of a remedy for prevention of the ſcurvy at ſea. The Doctor ſpent an incredible deal of time and labour in preparing the moſt elaborated chemical medicines. Volatile and fixed ſalts, ſpirits of all ſorts, eſſences, elixirs, electaries, *&c.* were yearly ſent over to the *Eaſt-Indies*; nay, even the *quinta eſſentia* (which became afterwards a celebrated *noſtrum* for the ſcurvy in *Germany*) of the chemical oil of the ſeeds of ſcurvy-graſs. But all proved ineffectual.

Bontekoe recommended to the *Dutch* ſailors an acrid alcaline ſpirit; *Glauber (b)* and *Boerhaave*, a ſtrong mineral acid, *viz. ſp. ſalis.* The Royal navy of *Great Britain* has been ſupplied, at a conſiderable expence to the government, by the advice of an eminent phyſician, with a large quantity of *elixir* of *vitriol*; which is the ſtrong mineral acid of vitriol combined with aromatics. Wine-vinegar was likewiſe preſcribed upon this occaſion by the college of phyſicians at *London*, when conſulted by the Lords of the Admiralty; which differs from all the former, being a mild vegetable acid procured by fermentation. Vinegar has been indeed much uſed in the fleet at all times. Many ſhips, eſpecially thoſe fitted out at *Plymouth*, carried with them cyder for this purpoſe, upon the recommendation of

(b) In his book, intitled, *Conſolatio navigantium, &c.*

the

the learned Dr. *Huxham*. The lateſt propoſal to the Lords of the Admiralty was a magazine of dried ſpinage prepared in the manner of hay. This was to be moiſtened and boiled in their food. To which it was objected by a very ingenious phyſician *(c)*, That no moiſture whatever could reſtore the natural juices of the plant loſt by evaporation, and, as he imagined, altered by a fermentation which they underwent in drying.

Moreover, all the remedies which could be uſed in the circumſtances of ſailors, that at any time have been propoſed for the many various diſeaſes going under the name of a *ſcurvy at land*, have likewiſe been tried to prevent and cure this diſeaſe at ſea: the effects of ſeveral of which, beſides the before-mentioned, I have myſelf experienced, *viz.* ſalt-water, tar-water, decoctions of guajac and ſaſſafras, bitters with *cort. winteran.* and ſuch warm antiſcorbutics as can be preſerved at ſea, *viz.* garlic, muſtard-ſeed, *pulv. ari comp. et ſpirit. cochlear.*; which laſt was formerly always put up in ſea-medicine cheſts. I have alſo in various ſtages, and for different ſymptoms of this diſtemper, made trial of

(c) Dr. Cockburn.—The Doctor's judgment is fully confirmed by experience. We find the college of phyſicians at *Vienna* ſent to *Hungary* great quantities of the moſt approved antiſcorbutic herbs dried in this manner; which were found to be of no benefit. Many of theſe would have their virtues as little impaired by drying as ſpinage, *e g.* marſh treſoil. *Kramer* tried almoſt every ſpecies of dried herbs to no purpoſe. Vid. part 3. chap. 2.

moſt

moſt of the mineral and foſſil remedies which have been recommended for the ſcurvy at land; ſuch as mercurial, chalybeate, antimonial, vitriolic, and ſulphurious medicines. But, before I mention the reſult of theſe experiments, and the obſervations made upon the effects of ſeveral remedies that have been moſt approved of in this diſeaſe, it may not be amiſs to take notice, that the want of ſucceſs hitherto in preventing this fatal malady at ſea, ſeems chiefly owing to theſe two cauſes.

1*ſt*, The methods of preſervation have been put in practice too late; that is, when the diſeaſe was already bred; it being generally then that *elixir vitriol*, vinegar, cyder, and other antiſcorbutics, were adminiſtered: whereas certain precautions ſeem neceſſary to prevent the firſt attacks; it being found, that almoſt all diſeaſes are eaſier prevented than removed.

2*dly*, Too high an opinion has been entertained of certain medicines recommended by phyſicians at land, rather from a preſumption founded on their theory of the diſeaſe, than from any experience of their effects at ſea. Indeed the cauſes which they were ſuppoſed to obviate, were often none of the true and real occaſions of the diſtemper. Thus lime-water has been long ſince preſcribed to correct the too great quantity of ſea-ſalt neceſſarily uſed by ſailors. And the college of phyſicians at *London* gives it as their opinion, that *Lowndes*'s ſalt made from brine, was prefer-

able for ſalting ſea-proviſions, to that made of ſea-water, even to the bay-ſalt; from a ſuſpicion of ſome noxious qualities in this ſalt which might occaſion the ſcurvy. *Sp. ſal. el. vitriol.* and vinegar, were deemed proper antidotes to the rank and putrid ſtate of ſea-proviſions, and water; or perhaps to the putreſcent ſtate of the humours in this diſeaſe.

But whatever good effect for the laſt purpoſes theſe may be ſuppoſed to have had in a ſmaller degree; yet experience has abundantly ſhewn, that they have not been ſufficient to prevent this diſeaſe, much leſs to cure it. And the ſame may be ſaid of many others. The conſequence of which is, the world has now almoſt deſpaired of finding out a method of preventing this dreadful evil at ſea; and it is become the received opinion, that it is altogether impoſſible there, either to prevent or cure it. But it is ſurpriſing, that this ill-grounded belief, ſo fatal in its conſequences, ſhould have gained credit, when we ſee people recovering from this diſeaſe every day (even in the moſt deplorable condition, and in its laſt ſtages) in a ſhort time, when proper helps are adminiſtered. I have already given an inſtance of ſeventy people cured in the bad air of a ſhip, without being landed *(d)*. I ſhall hereafter produce other inſtances of this diſeaſe being cured at ſea, though theſe muſt have occurred to every perſon who has

(d) P. 61.

had occaſion there to be converſant with ſcorbutical caſes *(e)*.

It may be proper, in order fully to remove this prejudice, to obſerve, that an epidemical ſcurvy, either at ſea or land, is an adventitious, not a natural diſeaſe: that is to ſay, it is not owing to any ſpontaneous degeneracy of the human body, from a healthful condition into this morbid ſtate; but to the influence of very powerful and active, but ſuch plain and obvious cauſes as have been before aſſigned *(f)*. And it is conſtantly experienced, that when theſe cauſes do not ſubſiſt, or are corrected and guarded againſt, the diſeaſe may be effectually prevented. This will admit of a demonſtration from many facts. Officers are ſeldom or never affected with the ſcurvy; even the ſubaltern and petty officers generally keep free from it, while it commits great ravage among the common ſeamen. There have occurred frequent inſtances of *Engliſh* and *Dutch* ſhips being in company together, where the former were in great diſtreſs from this diſeaſe; while the latter, by a very ſmall difference in their diet, were quite healthy. But what is ſufficient to convince the greateſt ſceptic, that this calamity may be effectually prevented, is the preſent healthfulneſs of *Newfoundland*, the northern parts of *Canada*, and of our factories at *Hudſon's*

(e) Many inſtances have already been given in Mr. *Ives's* journal, part 2. chap. 1.

(f) Part 2. chap. 1.

bay. In thoſe parts of the world, the ſcurvy was formerly more fatal to the firſt adventurers and planters, than it was ever known at ſea; which facts I ſhall have occaſion preſently to mention, and account for. And as it is a ſatisfaction to know that this diſeaſe may effectually be prevented, ſo it is likewiſe an encouragement to the utmoſt diligence in diſcovering, and putting in practice, the means proper for that purpoſe.

It being of the utmoſt conſequence to guard againſt the firſt approaches of ſo dreadful an enemy, I ſhall here endeavour to lay down the meaſures proper to be taken for this end, with that minuteneſs and accuracy which the importance of the ſubject, and the preſervation of ſo many valuable and uſeful lives, juſtly demand; and at the ſame time ſhall, as much as poſſible, avoid offering any thing that may be judged impracticable, or liable to exception, on account of the difficulty or diſagreeableneſs of complying with it. And, *laſtly*, I ſhall propoſe nothing dictated merely from theory; but ſhall confirm all by experience and facts, the ſureſt and moſt unerring guides.

What I propoſe is, firſt, to relate the effects of ſeveral medicines tried at ſea in this diſeaſe, on purpoſe to diſcover what might promiſe the moſt certain protection againſt it upon that element.

The medicine which ſucceeded upon trial, I ſhall afterwards confirm to be the ſureſt

preſervative, and moſt efficacious remedy, by the experience of others.

I ſhall then endeavour to give it the moſt convenient portable form, and ſhew the method of preſerving its virtues entire for years, ſo that it may be carried to the moſt diſtant parts of the world in ſmall bulk, and at any time prepared by the ſailors themſelves: adding ſome farther directions, given chiefly with a view to inform the captains and commanders of ſhips and fleets, of methods proper both to preſerve their own health, and that of their crew.

It will not be amiſs further to obſerve, in what method convaleſcents ought to be treated, or thoſe who are weak, and recovering from other diſeaſes, in order to prevent their falling into the ſcurvy; which will include ſome neceſſary rules for reſiſting the beginnings of this evil, when, through want of care, or neglect, the diſeaſe is bred in a ſhip.

As the ſalutary effects of the preſcribed meaſures will be rendered ſtill more certain, and univerſally beneficial, where proper regard is had to ſuch a ſtate of air, diet, and regimen, as may contribute to the general intentions of preſervation or cure; I ſhall conclude the precepts relating to the preſervation of ſeamen, with ſhewing the beſt means of obviating many inconveniencies which attend long voyages, and of removing the ſeveral cauſes productive of this miſchief.

The

The following are the experiments.

On the 20th of *May* 1747, I took twelve patients in the ſcurvy, on board the *Saliſbury* at ſea. Their caſes were as ſimilar as I could have them. They all in general had putrid gums, the ſpots and laſſitude, with weakneſs of their knees. They lay together in one place, being a proper apartment for the ſick in the fore-hold; and had one diet common to all, *viz.* water-gruel ſweetened with ſugar in the morning; freſh mutton-broth often times for dinner; at other times light puddings, boiled biſcuit with ſugar, *&c.* and for ſupper, barley and raiſins, rice and currants, ſago and wine, or the like. Two of theſe were ordered each a quart of cyder a-day. Two others took twenty-five drops of *elixir vitriol.* three times a-day, upon an empty ſtomach; uſing a gargle ſtrongly acidulated with it for their mouths. Two others took two ſpoonfuls of vinegar three times a-day, upon an empty ſtomach; having their gruels and their other food well acidulated with it, as alſo the gargle for their mouth. Two of the worſt patients, with the tendons in the ham rigid (a ſymptom none of the reſt had) were put under a courſe of ſea-water. Of this they drank half a pint every day, and ſometimes more or leſs, as it operated, by way of gentle phyſic. Two others had each two oranges and one lemon given them every day. Theſe they eat with greedineſs, at different times, upon an empty ſtomach. They continued

but ſix days under this courſe, having conſumed the quantity that could be ſpared. The two remaining patients, took the bigneſs of a nutmeg three times a-day, of an electary recommended by an hoſpital-ſurgeon, made of garlic, muſtard-ſeed, *rad. raphan.* balſam of *Peru*, and gum myrrh; uſing for common drink, barley-water well acidulated with tamarinds; by a decoction of which, with the addition of *cremor tartar*, they were gently purged three or four times during the courſe.

The conſequence was, that the moſt ſudden and viſible good effects were perceived from the uſe of the oranges and lemons; one of thoſe who had taken them, being at the end of ſix days fit for duty. The ſpots were not indeed at that time quite off his body, nor his gums ſound; but without any other medicine, than a gargariſm of *elixir vitriol.* he became quite healthy before we came into *Plymouth*, which was on the 16th of *June*. The other was the beſt recovered of any in his condition; and being now deemed pretty well, was appointed nurſe to the reſt of the ſick.

Next to the oranges, I thought the cyder *(g)* had the beſt effects. It was indeed not very ſound,

(g) Extract of a letter from Mr. Ives.

I judge it proper to communicate to you, what good effects I have obſerved in the ſcurvy, from the uſe of cyder and ſea-water, during the laſt cruiſe I made in the weſtern ſquadron, with my honoured benefactor Admiral *Martin*. But as I do not pretend to have taken notice of any thing, more than merely

ſound, being inclinable to be aigre or pricked. However, thoſe who had taken it, were in a fairer way of recovery than the others at the end of the fortnight, which was the length of time all theſe different courſes were continued, except the oranges. The putrefaction of their gums, but eſpecially their laſſitude and weakneſs, were ſomewhat abated, and their appetite increaſed by it.

merely a palliative benefit from them, I think, without mentioning particular caſes, it will be ſufficient for me to inform you, that, in our preceding cruiſe with the weſtern ſquadron, his Majeſty's ſhip *Yarmouth*, of 70 guns and 500 men, was not only troubled with the ſcurvy in common with other ſhips, but, in ſpite of all my endeavours, loſt in it a proportioned number of men. Upon our return from that cruiſe, I took an opportunity to repreſent to the Admiral, that as vegetable juices of all ſorts were from experience found to be the only true antiſcorbutics, and I had myſelf formerly experienced the good effects of apples, it was reaſonable to preſume that cyder muſt certainly be of ſervice. This ſuggeſtion agreed with ſome accounts the Admiral had received from others; and he with great readineſs bought, and put under my care, ſeveral hogſheads of the beſt *South Ham* cyder. During the next cruiſe, each ſcorbutic patient had daily a quart or three pints of cyder; and as many of them as I could prevail on, took twice a-week three quarters of a pint of ſea-water in a morning. In all other reſpects I treated them as I uſed to do people in the ſcurvy; which you well know, from the converſation which has often paſſed betwixt us on this ſubject, was with ſquill vomits, pills compoſed of ſoap, ſquills, garlic, *&c. elixir vitriol.* and other medicines ſuited to the different ſtages and ſymptoms of the malady. In one word, we had this cruiſe as many ſcorbutic patients as any other ſhip, in proportion to our complement of men. But although all the reſt buried a great many, ſome to the number of 20, others 30, 40, 50, and upwards; yet the *Yarmouth* did not bury more than two or three; and theſe at the latter end of the cruiſe, all our cyder having been expended for a week or ten days before. Upon our arrival at port, we ſent to the hoſpital a great many in very dreadful circumſtances.

As to the *elixir of vitriol*, I obſerved that the mouths of thoſe who had uſed it by way of gargariſm, were in a much cleaner and better condition than many of the reſt, eſpecially thoſe who uſed the vinegar; but perceived otherwiſe no good effects from its internal uſe upon the other ſymptoms. I indeed never had a great opinion of the efficacy of this medicine in the ſcurvy, ſince our longeſt cruiſe in the *Saliſbury*, from the 10th of *Auguſt* to the 28th of *October* 1746; when we had but one ſcorbutic caſe in the ſhip. The patient was a marine (one *Walſh*); who, after recovering from a quotidian ague in the latter end of *September*, had taken the *elixir vitriol.* by way of reſtorative for three weeks; and yet at length contracted the diſeaſe, while under a courſe of medicine recommended for its prevention.

There was no remarkable alteration upon thoſe who took the electary and tamarind decoction, the ſea-water, or vinegar, upon comparing their condition, at the end of the fortnight, with others who had taken nothing but a little lenitive electary and *cremor tartar*, at times, in order to keep their belly open; or a gentle pectoral in the evening, for relief of their breaſt. Only one of them, while taking the vinegar, fell into a gentle flux at the end of ten days. This I attributed to the genius and courſe of the diſeaſe, rather than to the uſe of the medicine. As I ſhall have occaſion elſewhere to take notice of the effects

fects of other medicines in this diſeaſe, I ſhall here only obſerve, that the reſult of all my experiments was, that oranges and lemons were the moſt effectual remedies for this diſtemper at ſea. I am apt to think oranges preferable to lemons, though perhaps both given together will be found moſt ſerviceable.

It may be now proper to confirm the efficacy of theſe fruits by the experience of others. The firſt proof that I ſhall produce, is borrowed from the learned Dr. *Mead (b)*.

" One year when that brave Admiral Sir " *Charles Wager* commanded our Fleet in the " *Baltic*, his ſailors were terribly afflicted " with the ſcurvy: but he obſerved, that " the *Dutch* ſhips then in company were " much more free from this diſeaſe. He " could impute this to nothing but their dif- " ferent food, which was ſtock-fiſh and gort; " whereas ours was ſalt fiſh and oat-meal *(i)*. " He was then come laſt from the *Mediter-* " *ranean*, and had at *Leghorn* taken in a great " quantity of lemons and oranges. Recol- " lecting from what he had often heard, how " effectual theſe fruits were in the cure of " this diſtemper, he ordered a cheſt of each " to be brought upon deck, and opened, every " day. The men, beſides eating what they " would, mixed the juice in their beer. It " was alſo their conſtant diverſion to pelt

(b) Diſcourſe on the ſcurvy, p. 111.

(i) The firſt is ſeldom now put on board ſhips of war, and of the laſt, *Engliſh* ſailors eat but little.

" one

" one another with the rinds, ſo that the deck " was always ſtrewed and wet with the fra- " grant liquor. The happy effect was, that " he brought his ſailors home in good health".

I have been favoured upon this occaſion, by different gentlemen, with many inſtances of the like good effects of theſe fruits in this diſeaſe at ſea; particularly by Mr. *Francis Ruſſel*, now ſurgeon general to the iſland of *Minorca*, in a cruiſe performed by the *Princeſs Caroline* off the iſlands of *Sardinia* and *Corſica*; where, according to his relation, ſome of theſe fruits got at *Vado*, preſerved great part of the crew, which otherwiſe muſt undoubtedly have periſhed.

An ingenious ſurgeon of great merit and experience in the *Guernſey*, when extremely diſtreſſed by the ſcurvy *(k)*, has the following obſervation in his letter upon it. " I have " great reaſon to believe, that ſeveral lives " were abſolutely preſerved, when we were " at ſea, by a lemon ſqueezed into ſix or " eight ounces of *Malaga* wine mixed with " water, and given twice a-day."

I am informed, it was principally oranges which ſo ſpeedily and ſurpriſingly recovered Lord *Anſon*'s people at the iſland of *Tinian*. Of which that noble, brave, and experienced commander was ſo ſenſible, that, before he left the iſland, one man was ordered on ſhore from each meſs to lay in a ſtock of them for their future ſecurity.

(k) See the caſe of that ſhip, chap. 1. p. 60.

My

My ingenious friend Mr. *Murray*, who has favoured me with ſo many uſeful obſervations upon this diſeaſe; and has had the greateſt opportunities of being acquainted with it, as he for a conſiderable time attended the naval hoſpital at *Jamaica*, whilſt our great fleets were in the *Weſt-Indies*, and was likewiſe ſurgeon of the *Canterbury*, expreſſes himſelf thus in his letter. "As to oranges and lemons, "I have always found them, when properly "and ſufficiently uſed, an infallible cure "in every ſtage and ſpecies of the diſeaſe, if "there was any degree of natural ſtrength "left; and where a diarrhœa, lientry, or "dyſentery, were not joined to the other "ſcorbutic ſymptoms. Of which we had a "moſt convincing proof, when we arrived "at the *Daniſh* iſland of *St. Thomas (l)*; "where fifty patients belonging to the *Can-* "*terbury*, and ſeventy to the *Norwich*, in all "the different ſtages of this diſtemper, were "cured, in a little more than twelve days, "by limes alone; where little or no other "refreſhments could be obtained."

It was reaſonable to aſcribe this to the eminent virtues of theſe fruits; as it is well known, and daily experienced, that without ſuch remedies ſcorbutic people will infallibly die in the pureſt land-air. But what cures ſuch deplorable caſes, muſt ſtill more powerfully prevent them. Perhaps one hiſtory more may ſuffice to put this out of doubt.

(l) See the former part of this letter, chap. 1. p. 67.

"In

" In the firſt voyage made to the *Eaſt-In-*
" *dies (m)*, on account of the *Engliſh Eaſt-*
" *India* company, there were employed four
" ſhips, commanded by Captain *James Lan-*
" *caſter* their General, *viz.* the *Dragon*, hav-
" ing the General and 202 men, the *Hector*
" 108 men, the *Suſan* 82, and the *Aſcenſion*
" 32. They left *England* about the 18th
" of *April*; in *July* the people were taken ill
" on their paſſage with the ſcurvy; by the
" 1ſt of *Auguſt*, all the ſhips, except the Ge-
" neral's, were ſo thin of men, that they had
" ſcarce enough to hand the ſails; and, up-
" on having a contrary wind for fifteen or
" ſixteen days, the few who were well be-
" fore, began alſo to fall ſick. Whence the
" want of hands was ſo great in theſe ſhips,
" that the merchants who were ſent to diſ-
" poſe of their cargoes in the *Eaſt-Indies*,
" were obliged to take their turn at the helm,
" and do the ſailors duty, till they arrived at
" *Saldania (n)*; where the General ſent his
" boats, and went on board himſelf, to aſſiſt
" the other three ſhips; who were in ſo
" weakly a condition, that they were hardly
" able to let fall an anchor, nor could they
" hoiſt out their boat without his aſſiſtance.
" All this time the General's ſhip continued
" pretty healthy. The reaſon why his crew
" was in better health than the reſt of the

(m) Vid. *Harris*'s collection of voyages, and *Purchas*'s collection, vol. 1. p. 147.

(n) A bay near the Cape of *Good Hope*.

" ſhips,

" ſhips, was owing to the juice of lemons; " of which the General having brought ſome " bottles to ſea, he gave to each, as long as " it laſted, three ſpoonfuls every morning " faſting. By this he cured many of his " men, and preſerved the reſt: ſo that al- " though his ſhip contained double the num- " ber of any of the others; yet (through the " mercy of God, and to the preſervation of " the other three ſhips) he neither had ſo " many men ſick, nor loſt ſo many as they " did."

Here indeed is a remarkable and authentic proof of the great efficacy of juice of lemons againſt this diſeaſe; as large and crouded ſhips are more afflicted with it, and always in a higher degree, than thoſe that are ſmall and airy. This little ſquadron loſt 105 men by the ſcurvy. Upon its afterwards breaking out among them when in the *Eaſt-Indies*, in a council held at ſea it was determined, to put directly into ſome port where they could be ſupplied with oranges and lemons, as the moſt effectual and experienced remedies to remove and prevent this dreadful calamity.

I cannot omit upon this occaſion obſerving, what caution is at all times neceſſary in our reaſoning on the effects of medicines, even in the way of analogy, which would ſeem the leaſt liable to error. For ſome might naturally conclude, that theſe fruits are but ſo many acids, for which tamarinds, vinegar, *ſp. ſal. el. vitriol.* and others of the ſame tribe, would

would prove excellent *ſuccedaneums*. But, upon bringing this to the teſt of experience, we find the contrary. Few ſhips have ever been in want of vinegar, and, for many years before the end of the late war, all were ſupplied ſufficiently with *el. vitriol.* Notwithſtanding which, the *Channel* fleet often put on ſhore a thouſand men miſerably over-run with this diſeaſe, beſides ſome hundreds who died in their cruiſes. Upon thoſe occaſions tar-water, ſalt water, vinegar, and *el. vitriol.* eſpecially, with many other things, have been abundantly tried to no purpoſe: whereas there is not an inſtance of a ſhip's crew being ever afflicted with this diſeaſe, where the before-mentioned fruits were properly, duly, and in ſufficient quantity, adminiſtered.

I elſewhere obſerved the uncertainty of ſuch theories as are founded upon the chemical principles of acid and alcali *(o)*: for although acids agree in certain properties; yet they differ widely in others, and eſpecially in their effects upon the human body. Of theory in phyſic the ſame may perhaps be ſaid, as has been obſerved by ſome of zeal in religion, That it is indeed abſolutely neceſſary; yet, by carrying it too far, it may be doubted whether it has done more good or hurt in the world.

Some will perhaps ſay, that theſe fruits have been often uſed in the ſcurvy without ſucceſs; as appears from the experience of

(o) Part 1. chap. 2.

phy-

phyſicians, who preſcribe them every day in that diſeaſe at land. And here we may again obſerve the fatal conſequence of confounding this malady with others. Legions of diſtempers (according to *Willis* and others) very different from the real and genuine ſcurvy, have been claſſed under its name: and becauſe the moſt approved antiſcorbutics fail to remove ſuch diſeaſes, hence we are told by authors *(p)*, that it is the maſterpiece of art to cure it. But this is contradicted by the daily experience of ſeamen, by the journals of our ſea-hoſpitals, and by the yearly experience of our *Engliſh Eaſt-India* ſhips at *St. Helena*, and the Cape of *Good Hope*. So that nothing can be more abſurd, than to object againſt the efficacy of theſe fruits in preventing and curing the real ſcurvy, becauſe they do not cure very different diſeaſes.

Some new preſervative might here have been recommended; ſeveral indeed might have been propoſed, and with great ſhew of the probability of their ſucceſs; and their novelty might have procured them a favourable reception in the world. But theſe fruits have this peculiar advantage above any thing that can be propoſed for trial, that their experienced virtues have ſtood the teſt of near 200 years. They were providentially diſcovered, even before the diſeaſe was well known, or at leaſt had been deſcribed by phyſicians. *Ronſſeus*, the firſt writer on this ſubject, men-

(p) Boerhaave, and many others.

tions

tions them *(q)*; and obſerves, that in all probability the *Dutch* ſailors had by accident fallen upon this remedy, when afflicted with the ſcurvy, in their return from *Spain*, loaded with theſe fruits, eſpecially oranges. Experience ſoon taught them, that by thus eating part of their cargo, they might be reſtored to health. And if people had been leſs aſſiduous in finding out new remedies, and truſted more to the efficacy of theſe fruits, for preventing this fatal peſtilence to ſeamen, the lives of many thouſand ſailors, and others *(r)*, (eſpecially during the laſt war) might in all probability have been preſerved. But ſome have been miſled to recommend many other things, as of equal, if not ſuperior antiſcorbutic qualities to theſe; and have reduced them to a level with other acids, and many falſely ſuppoſed antiſcorbutic medicines: from whence the many unhappy diſappointments

(q) Epiſt. 2.

(r) Vid *Kramer*'s obſervations, part 3. chap 2. the beſt ever made on this diſeaſe; which abundantly confirm all that is here advanced. In a book publiſhed afterwards he makes the following remarks. The ſcurvy is the moſt loathſome diſeaſe in nature; for which no cure is to be found in your medicine-cheſt, no not in the beſt-furniſhed apothecary's ſhop. Pharmacy gives no relief, ſurgery as little. Beware of bleeding; ſhun mercury as a poiſon: you may rub the gums, you may greaſe the rigid tendons in the ham, to little purpoſe. But if you can get green vegetables; if you can prepare a ſufficient quantity of freſh noble antiſcorbutic juices; if you have oranges, lemons, or citrons; or their pulp and juice preſerved with ſugar in caſks, ſo that you can make a lemonade, or rather give to the quantity of three or four ounces of their juice in whey, you will, without other aſſiſtance, cure this dreadful evil. *Krameri medicina caſtrenſis.*

hitherto

hitherto met with in preventing this diſeaſe at ſea, ſeem to have ariſen.

We are told, that at the ſiege of *Thorn*, when this calamity raged with great violence in the town, it was the laſt and moſt earneſt petition of the diſeaſed, that ſome of theſe fruits might be permitted to enter their gates, as the only hopes of life, and laſt comfort of the dying patient *(s)*. In this diſeaſe, when drugs of all ſorts are nauſeated and abhorred, the very ſight of theſe fruits raiſes the drooping ſpirits of the almoſt expiring patient. I have often obſerved (upon ſeeing ſcorbutic people landed at our naval hoſpitals) that the eating of them was attended with a pleaſure eaſier to be imagined than deſcribed. Hence Lord *Delawar*, a very great ſufferer in this malady (in the relation of his caſe to the Lords and others of the council of *Virginia)* very pathetically expreſſes himſelf thus. "Heaven "has kindly provided theſe fruits as a ſpecific "for the moſt terrible of evils *(t)*."

As oranges and lemons are liable to ſpoil, and cannot be procured at every port, nor at all ſeaſons in equal plenty; and it may be inconvenient to take on board ſuch large quantities as are neceſſary in ſhips for their preſervation from this and other diſeaſes; the next thing to be propoſed, is the method of preſerving their virtues entire for years in a

(s) Bachſtrom obſerv. circa ſcorbutum, p. 15.
(t) Purchas, vol. 4. p. 16.

convenient and ſmall bulk. It is done in the following eaſy manner.

Let the ſqueezed juice of theſe fruits be well cleared from the pulp, and depurated by ſtanding for ſome time; then poured off from the groſs ſediment: or, to have it ſtill purer, it may be filtrated. Let it then be put into any clean open veſſel of china or ſtone-ware, which ſhould be wider at the top than bottom, ſo that there may be the largeſt ſurface above to favour the evaporation. For this purpoſe a china baſon or punch-bowl is proper *(u)*; as generally made in the form required. Into this pour the purified juice; and put it into a pan of water, upon a clear fire. Let the water come almoſt to boil, and continue nearly in that ſtate of boiling (with the baſon containing the juice in the middle of it) until the juice is found to be of the conſiſtence of a thick ſyrup when cold. The ſlower the evaporation of the juice the better; and it will require at leaſt twelve or fourteen hours continuance in the bath heat, before it is reduced to a proper conſiſtence.

(u) In the former edition I had ſaid, that a common earthen veſſel, well glaſed, would anſwer the purpoſe. But I have ſince been informed by a very ingenious gentleman, that making this *rob* in a coarſe earthen veſſel, he found the glaſing of it diſſolved by the acid, and converted into a ſugar of lead. To prevent the dangerous conſequences of which, I publiſhed a ſhort paper in the *Edinburgh* Monthly Magazine in *May* 1754, which was ſoon after reprinted in the Gentleman's Magazine. It was then drawn up in haſte. Since that time, by repeated experiments, I find that the coarſe glaſed earthen veſſels are unfit for this and ſome other uſes.

It is then, when cold, to be corked up in a bottle for uſe. Two dozen of good oranges, weighing five pounds four ounces, will yield one pound nine ounces and a half of depurated juice; and when evaporated, there will remain about five ounces of the *rob* or extract, which in bulk will be equal to leſs than three ounces of water. So that thus the acid, and virtues of twelve dozen of lemons or oranges, may be put into a quart-bottle, and preſerved for ſeveral years.

I have ſome of the extract of lemons now by me, which was made four years ago. And when this is mixed with water, or made into punch, few are able to diſtinguiſh it from the freſh ſqueezed juice mixed up in like manner; except when both are preſent, and their different taſtes compared at the ſame time; when the freſh fruits diſcover a greater degree of ſmartneſs and fragrancy.

The learned Dr. *Mead* aſcribes ſome ſalutary effects to the fragrancy of the freſh fruits, when he obſerves, that by the ſailors pelting each other with the rinds in Admiral *Wager*'s ſhip, the decks were ſtrewed and wet with this wholſome liquor. Was any thing to be expected from perfuming the air with the fragrancy of theſe fruits, it is eaſily done at any time by a few drops of their eſſence, or the aromatic oil contained in the rinds. An addition of a ſmall quantity of this to the extract, gives it the ſmell and fragrancy of the freſh fruit in great perfection. And if it is alſo re-

quired to be taken inwardly, a few drops of it upon ſugar may be given along with the extract. But it is the ſaponaceous juice alone, of theſe fruits, that is here requiſite; and their entire ſalutary virtues may be obtained by taking that inwardly; as appears plainly by the relation of Captain *Lancaſter*'s voyage, where the juice of lemons kept in bottles, not only prevented the diſeaſe, but cured it, at ſea. This juice muſt either have been mixed up with ſpirits, or ſomething elſe, to preſerve it *(w)*; and conſequently differed much more in

(w) Lemon juice is extremely difficult to preſerve, whereas orange-juice will keep in any voyage by the following method. Let the fruit be well picked, ſo that no orange is ſqueeſed which is in the leaſt ſpoilt, which might otherwiſe taint the whole of the juice. After ſtraining, it muſt be put in a clean veſſel (a caſk is commonly uſed) and a large ſediment will be depoſited, beſides a cake of lighter *feces*, which ſwims atop. The clear juice in the middle of theſe muſt be drawn off by means of a cock free from either, and put into ſmall pint bottles. Each bottle, after having a little of the beſt *Florence* oil poured atop of the juice, muſt be well corked, and the acceſs of the air prevented by a covering of wax or reſin over the cork. I have been told, that as orange-juice will keep ſo well, and may be bought at any ſeaſon of the year in *London*, there ſeems no occaſion for recommending the *rob* of theſe fruits; and that even oranges and lemons properly taken care of, may be preſerved long at ſea. But ſuch who talk in this manner, are unacquainted with the conveniencies at ſea, the diſpoſition of mariners and ſome of their officers. 'Tis neceſſary they ſhould conſider we are not now preſcribing for perſons at land, who have large cellars and ample conveniencies, nor for the captains of men of war and their officers, who are ſeldom afflicted with this diſeaſe. Theſe gentlemen may for their proper and infallible ſecurity, carry out the juices of ſcurvy graſs, creſſes, and oranges, or the *ſucci ad ſcorbuticos*, which by a method of preſerving them now ſufficiently known, will keep good and freſh the ſpace of a year or two. But no maſter of a merchant ſhip will, no captain of

in quality from the freſh fruit than what is propoſed.

However, if it be judged of any conſequence to preſerve the perfect fragrancy of the

of a man of war can, lay up a neceſſary ſtore of ſuch juices, or even a ſufficient quantity of oranges, or of their juice, for the preſervation of a whole ſhip's company. Beſides, when a ſhip touches at a proper place where a ſupply of oranges, limes, or citrons can be had, and it is in the power of every ſailor to purchaſe as many as he will, they have neither conveniencies for keeping the fruits, nor of depurating and preſerving the juice of oranges. Whereas, by making the *rob* of theſe fruits in the manner here directed, with little more than a day's trouble, they may lay up in a quart bottle as much as will ſerve them for ſeveral years in other voyages, and by its conſtant uſe, purify their conſtitution entirely from the ſcorbutic taint. Now though it is well known ſome of the ſailors are very thoughtleſs, and take but little concern about their health, yet doubtleſs there are many among them who reflect, and will take the proper pains when inſtructed. For the ſake of theſe the *rob* is recommended, as alſo to the ſurgeons of ſhips (when in a place where plenty of theſe fruits can be procured, and their virtues can be reduced into ſo ſmall a compaſs) leaving it to the officers to provide themſelves with the freſh fruits or their juices. 'Tis indeed a pity that the men of war and the ſhips in the *Eaſt-India* company's ſervice, are not ſupplied with either the juice of oranges, or the extract of lemons. I am informed, there are perſons in *London* who would inſure the keeping of the orange-juice made by them for a twelvemonth: and one may almoſt affirm, that three gallons of ſuch juice, which may be purchaſed for leſs than twenty ſhillings, will preſerve a merchant-ſhip from the ſcurvy in a paſſage round *Cape Horn*. But however cheap, however ſimple this remedy may appear to be, if it is not to be had at ſea, the whole cheſt of ſea-medicines will not avail the unhappy patients. Some perſons cannot be brought to believe, that a diſeaſe ſo dreadful and fatal at ſea, can poſſibly be prevented or cured by ſuch eaſy means. They would have more faith in ſome elaborate compoſition dignified with the pompous title of an antiſcorbutic golden elixir, or the like. But the affair in queſtion is of too ſerious and important a nature to trifle with; and where the health and lives of ſo many thouſands

the fruit, I have found, upon experiment, that there are ſeveral other ways of doing it. They who intend this extract for acidulating punch, may infuſe ſome of the freſh peel of the oranges or lemons into the ſpirit before it is uſed. I have known ſome who diſtil brandy themſelves from their ſpoiled wines, throw theſe peels into the ſtill. Either of the methods makes a moſt agreeable and fragrant punch with the *rob*. The eſſential oil of the rind is thus ſo ſubtiliſed, and incorporated with the ſpirit, as to be itſelf converted as it were into a purer ſpirit. And it will not then have the heating quality, nor affect the head afterwards ſo much as the ſimple oil may do, when taken in too great a quantity.

But, for this purpoſe, I find it is ſufficient to add a very ſmall quantity of the outer peel to the extract a little before it is taken off the fire, and there will be all that is requiſite to make it entirely equal to the freſheſt fruit; in ſo much that the niceſt taſte will not be able to diſtinguiſh any difference. Its virtues

are concerned, it would be unpardonable to impoſe upon the public. Facts are ſufficient to convince the unprejudiced, and the following is too much to the purpoſe to be omitted. A ſhip lately upon going out of port, found they had a man on board bad in the ſcurvy. The officers being well provided with lemons for punch, ordered all their ſqueeſed lemons to be given him. He every day eat the pulp, rind, and what little juice remained behind, of three or four lemons: by which means the diſeaſe was ſo far from gaining ground upon him, that after continuing three months at ſea in a cruiſe, he returned much freer from the ſcurvy, than when he ſet out on the voyage.

(as

(as muſt appear to any one ſo far converſant in chemical principles, as to know there is nothing more loſt here than water, with a ſcarce perceptible acid) will be found nothing inferior to the freſh fruit *(x)*.

In this manner prepared, it muſt be kept in bottles, where it will remain good for ſeveral years. When made in a proper place and ſeaſon, it will come very cheap; and our navy may be ſupplied with it at a much eaſier rate than any thing as yet propoſed. It will be found extremely wholſome on all occaſions, but eſpecially to correct bad brandy, and other noxious ſpirits, often drank by ſailors in immoderate quantities. Rum in the *Weſt-Indies*, arrack or brandy, when ſerved them by way of allowance, ſhould always be firſt mixed up

(x) This I think cannot be doubted by any perſon who has uſed it, or who will take the pains to make proper compariſons and trials with it, and the freſheſt orange or lemon-juice. Indeed the benefit preſumed to be derived from the flavour is ſo ſmall, that the plain extract is quite ſufficient. Officers, by putting in a little of the candied peel in their punch, will give it the agreeable flavour wanted. And there is another and very elegant method of obtaining and preſerving the entire virtues of the lemon or orange ſkins. Rub the outſide of the ſkins againſt a piece of loaf-ſugar. The inequalities on the ſurface of the ſugar ſerve as a grater, and tear open the little cells in which the eſſential oil is contained. This eſſence flows plentifully out, and is imbibed by the ſugar. When one part of the ſugar is ſufficiently impregnated and wet, ſcrape it off with a knife, and put it into a bottle: repeat the ſame operation until the whole eſſence is extracted from the rinds. The ſugar does not in the leaſt impair or alter its aromatic virtues; and in this manner it will keep good for many years. When mixed with the juice or *rob*, the whole virtue of the fruit is exhibited.

with the *rob*. This will not only make them more palatable, but, what is a matter of much greater moment, will convert theſe poiſonous pernicious draughts into a ſovereign remedy for, and a preſervative againſt a ſcorbutic habit, the bane of ſeafaring people.

I ſhall add one obſervation in its favour. The iſland of *Jamaica* is much leſs liable to ſickneſs at preſent than formerly. Our fleets in the *Weſt-Indies* in the beginning of the war were much more ſickly than in the latter end of it, when indeed they were ſurpriſingly healthy. This, with great reaſon, has been univerſally aſcribed to the drinking a great quantity of this acid, by making their punch ſour and weak.

I proceed to ſome farther directions given for the information of commanders of ſhips, and thoſe who have proper conveniencies, who may relieve the ſick, upon occaſion, with their ſtores. And it may be proper to acquaint them, that moſt berries, and ſeveral fruits, when gathered two thirds ripe on a dry day, while the ſun ſhines, if put into earthen pots, or rather in dry bottles, well corked, and ſealed up, ſo that no air or moiſture can enter, will keep a long time, and, at the end of a year, be as freſh as when new pulled. Theſe the captains may ſupply themſelves with at every port in *England*, from the paſtry-cooks ſhops, with proper directions for their preſervation. Green gooſeberies will keep for years, if, after being put into dry bottles,

bottles, their moiſture is exhaled, by putting the bottles ſlightly corked into a pot of water, which is allowed to come nearly to boil, and continue ſo for a little; when a very ſmall quantity of juice yielded by them is to be thrown away, and they are afterwards kept cloſe ſtopt. Theſe would prove a ſovereign remedy for the ſick: and, by ſuch methods, ſhips in long voyages, when touching at any place for water and proviſions, may likewiſe lay up a ſea-ſtore of berries and fruits.

Various wholſome herbs and roots may likewiſe be preſerved at ſea, according to the different directions given for that purpoſe in books of chemiſtry and confectionary; ſuch as ſmall onions in a pickle of vinegar, *&c.* Moſt green vegetables, as cabbage, *French* beans, and others, are preſerved, if put when dry in clean dry ſtone-jars, with a layer of ſalt at bottom; then a thin layer of the vegetable covered with ſalt, and ſo alternately, till the jar is full; when the whole is to be covered with ſalt and well preſſed down with a weight, and its mouth cloſe ſtopt, that no air or moiſture may enter. At uſing, the ſalt is to be waſhed off by warm water; when the vegetable, after keeping a year, will be found freſh and green. I have been told, that in this manner that ſovereign never-failing remedy, the *Greenland* ſcurvy-graſs *(y)*, may be pre-

(y) Vid. a letter concerning it, chap 5. alſo the extraordinary caſe of a ſailor related by *Bachſtrom.*

ſerved,

ſerved, and that parts of it have been brought over quite freſh and green.

Every common ſailor ought to lay in a ſtock of onions. I never obſerved any that uſed them fall into the ſcurvy at ſea. When this ſtock is exhauſted, the captains may have recourſe to their pickled ſmall onions; and with fowls, mutton, or portable ſoop, and the pickled cabbage before-mentioned, of which the *Dutch* (*z*) ſell great quantities, they will be able

(*z*) The *Dutch* ſailors are much leſs liable to the ſcurvy than the *Engliſh*, owing to this pickled vegetable carried to ſea. *Vid. Krameri epiſtolam de ſcorbuto.* A meſs of this given twice a-week boiled in their peas, ſeems all the addition requiſite to be made to the preſent victualling of the navy, for the effectual prevention of the ſcurvy. It may be objected, That its ſaltneſs would rather prove hurtful in this diſeaſe. But this objection is founded upon a very falſe opinion, that ſea-ſalt breeds the ſcurvy: the contrary of which has been fully demonſtrated, chap 1. and is confirmed by numberleſs inſtances of giving ſalt water in very bad ſcurvies, both at ſea and land, with great benefit to the patient. See Mr. *Ives*'s letter, p. 150. Dr. *Grainger*'s, chap. 5.

The truth is, that vegetables preſerved in this manner, ſo far from being ſalt after duly waſhing them in warm water, require to be eat with ſalt: they are thus preſerved quite ſucculent and green. Their virtue is the ſame as if taken freſh out of the garden, and the method infinitely ſuperior to the drying of them, like hay, as was propoſed; which would entirely deſtroy their antiſcorbutic quality; as will be made appear when we come to inquire (chap. 6.) into the properties and virtues peculiar to green ſucculent vegetables, ſo eſſentially requiſite for the prevention, and in the cure of this malady. To the ſurgeon's neceſſaries in long and ſickly voyages, it would not be amiſs to add ſome boxes of portable ſoop; and at all times ſome pots of preſerved ſmall onions, together with ſome *French* prunes. When the ſcurvy begins to appear, or even when its approach is apprehended, the ſhip's company ought to have ſome of theſe onions, or when there are none on board, ſome garlic or ſhellot

able to make a broth at ſea, almoſt the ſame with what is uſed in our naval hoſpitals for recovery of ſcorbutic people. I have known ſeveral captains, who, by carrying out boxes filled with earth, which ſtood in their quarter-galleries, were ſupplied with wholſome ſalads, after being ſome months out of harbour.

ſhellot (ſupplied them by the ſurgeon) boiled in their water-gruel; and of this they ought to make a hearty breakfaſt. They ſhould be put on ½ or ⅓ ſhort-allowance of ſalt beef and pork, to be eat with muſtard and vinegar, and have a ſmall quantity of ginger given them by the ſurgeon to mix in their puddings, which will make them much lighter. In *lieu* of their ſalt meat, the purſer may ſupply them with cyder, wine, or the ſpruce beer afterwards recommended; or if they are ſerved with brandy, he may furniſh them with ſugar and a ſufficient quantity of orange-juice to make it into punch. A gallon of orange juice is ſold for ſix ſhillings, which allowing an ounce of it to each man in the day, will ſerve 128 men, and the expence be three-pence half-penny a week for each; whereas when at ½ ſhort-allowance of beef and pork, there becomes 4⅔d. *per* week due each man. This overplus of the ſhort-allowance money will be ſufficient to enable the purſer to furniſh molaſſes for the punch of the ſhip's company, as alſo a meſs of either green or pickled cabbage once a week. Theſe are to be had at any port in *England* for a farthing a piece. If they are likely to ſpoil, they may be ſerved out in their peas-ſoop, after being a week or two at ſea, which would be a great refreſhment to the people, and the means of ſecuring them againſt a future ſcurvy. The peas ought always to be ſerved out in full allowance, and this meſs would be greatly improved by the addition of dried mint or thyme, garlic, &c. Thus might the ſcurvy in all probability be effectually prevented in our navy, without putting the government to a farthing expence, by a commutation of proviſions and neceſſaries, at the diſcretion of the purſer and ſurgeon, and a proper regulation of their diet. It is demonſtrable from the moſt inconteſtable experience, that a ſoop of boiled cabbage and onions, will cure an adventitious ſcurvy in its firſt ſtage, either at ſea or land, in any part of the world. By a like ſoop, with addi-

bour. A caſk of rich garden-mould put occaſionally in boxes on the poop, and ſown with the ſeed of garden-creſſes, would furniſh theſe at any time. Such ſeeds will likewiſe grow in wet cotton.

Beſides freſh and preſerved fruits and vegetables, fermented liquors of all ſorts are

addition of freſh fleſh-meat, ſeventy people were perfectly cured in the *Guernſey*, without one of them ſetting foot on ſhore. This was not owing to the fleſh in their ſoop, but to the vegetables: for I have known ſome favourites of the Captain's who had freſh mutton-ſoop given them almoſt every day, without the leaſt benefit, until they arrived at port; where they were cured in a few days by the ſame ſoop, with the addition of vegetables. And that vegetables have the ſame effect at ſea as at land, is plain from Mr. *Ives*'s journal (ſee p. 100.) where the people continued to recover at ſea from the 29th *November* that they left *Vado*, until the 25th *December*, by means of fruits given them.

A gentleman on board the Commodore at that time told me, that the whole ſquadron was greatly diſtreſſed with the ſcurvy, and in particular the Commodore's ſhip; in ſo much, that, after having uſed all means, to no purpoſe, that could be thought of to put a ſtop to the malady, he was at laſt obliged, for the preſervation of his people, to ſtretch over to the coaſt of *Italy*, and leave his ſtation for a while. At this time many were extremely bad. Upon his arrival at *Vado*, he found the whole country covered with ſnow; and ſuch was the ſeverity of the winter, that there was hardly any kind of greens to be got for the relief of his diſtreſſed crew. Upon which this excellent commander (now Adm. *Oſborn*) very wiſely directed his people to buy up all the oranges and lemons in the town. His boats brought on board a conſiderable quantity of them. He likewiſe ſupplied his ſquadron with ſome freſh beef. Being obliged to make but a very ſhort continuance at *Vado*, he directly returned to his ſtation with a ſtore of theſe fruits, but with his men ſtill in a bad condition. He continued cruiſing at ſea for three weeks, in very rough weather. Notwithſtanding which, by means of theſe fruits, many who were very bad, and all who were in the firſt ſtage of the diſeaſe, were perfectly recovered while at ſea, and the lives of the whole crew preſerved.

found

found beneficial in this diſeaſe. Some of them however are more antiſcorbutic than others. By my own experience, I found cyder the beſt of any I have had occaſion to try. And it would ſeem an excellent method of preſerving other vegetable juices (gooſeberries, blackberries, currants, elderberries, or even *Seville* oranges) to ferment them into made wines or beer. Theſe I am perſuaded will be found preferable to many medicated antiſcorbutic ales and wines by infuſion, that might here be recommended.

It is pretty remarkable, that the firſt northern colonies in *America* were extremely ſubject to this diſeaſe. The *French* eſpecially upon their firſt planting *Canada* and *New-France*, ſuffered ſo much by the mortality it occaſioned in the winter-ſeaſon, that they had often thoughts of abandoning their ſettlement; even the natives were not exempted from the ravage of this cruel evil *(a)*: whereas not only theſe colonies, but others in a colder and more northern ſituation, are at preſent quite healthy. One would be apt to aſcribe this, to the many hardſhips and inconveniencies infant-colonies are neceſſarily expoſed to; were it not, that we ſee many poor people wintering yearly in *Newfoundland*, where this diſeaſe was formerly ſo fatal, who from poverty ſuffer equal, if not greater hardſhips, than the firſt planters during the ſeverity of winter. They are, for almoſt eight months

(a) See part 3. chap. 1.

in

in the year, deſtitute of freſh vegetables, and live entirely on ſalt and dried fiſh, coarſe bread, and much worſe fare than a ſhip's proviſions. Their air is likewiſe groſſer, colder, and moiſter, than is commonly the caſe at ſea. Notwithſtanding which, they keep pretty free from the ſcurvy. And this is aſcribed to their common drink, which is ſpruce beer.

It is indeed matter of ſurpriſe, and was taken notice of before as the moſt convincing proof that this calamity may be prevented any where, that the people who reſide at our factories in *Hudſon*'s bay, are ſo very healthy; where, according to *Ellis*'s account, they ſometimes do not bury one man in ſeven years out of a hundred that are in their four factories *(b)*: whereas the firſt adventurers to that part of the world, who wintered in the ſame places, were almoſt all deſtroyed by the ſcurvy, *viz.* Capt. *Monck*'s people in 1619 *(c)*, Capt. *Thomas James*'s at *Charleton* iſland in 1631 *(d)*, and moſt others who attempted it. A ſet of ſailors, conſiſting of ſeven men, was left two winters ſucceſſively, in the years 1633 and 1634, at *Greenland* and *Spitzbergen*, by way of experiment: but every man of them next ſpring was found to have died of the ſcurvy *(e)*. The unhappy fate of thoſe people, who all periſhed in this great miſery, and

(b) See voyage to *Hudſon*'s bay.
(c) *Churchill*'s collection of voyages, vol. 1. p. 541.
(d) *Harris*'s collection of voyages, vol. 2. p. 406.
(e) *Churchill*'s collection, vol. 2. p. 347.

left

left behind them a journal of their piteous misfortunes, ſeems to have been owing to the world's ignorance of the diſtemper at that time, and the pernicious methods recommended to them for preſervation; which we find were chiefly purging antiſcorbutic potions, diſtilled ſpirits, *viz.* brandy, and the like; all which infallibly increaſed the malady, and haſtened their unhappy end.

From theſe unſucceſsful trials it was judged impracticable to paſs the winter in thoſe parts. But the following accident afforded the moſt convincing evidence of this miſtake. A boat's crew, conſiſting of eight men, was by chance left behind, and obliged to winter in almoſt the ſame place *(f)*. The ſeaſon proved equally rigorous and ſevere. The poor fellows had nothing to truſt to for ſuſtenance but what their guns procured. Thus luckily were every one of them preſerved alive, by being unprovided with what might have been deemed neceſſary (though in effect pernicious) means of ſubſiſtence and preſervation. They had no brandy, no coarſe hard biſcuit, nor ſalt fleſh-meats, *&c.*

But what deſerves particular conſideration, is, that thoſe who live on the coarſeſt food, with a ſalt diet, and uſe ſpruce beer at the ſame time, are ſeldom or never afflicted in the coldeſt and moſt norther countries. It was obſerved in *Holland*, that when the cuſtom of drinking wine more freely was practiſed,

(f) Churchill, vol. 4. p. 745.

this diſtemper became leſs frequent *(g)*. And among the firſt cures recommended to the world was wine, with wormwood infuſed in it *(b)*; which was afterwards long uſed by way of prevention in *Saxony*, where this evil was peculiarly endemic *(i)*. Fermented vinous liquors of any kind are indeed very beneficial. But it appears by the experience of the northern *American* colonies, as alſo of ſeveral countries up the *Baltic* in *Europe*, *&c.* that genuine ſpruce beer is, above all others, not only an effectual preſervative againſt it, but an excellent remedy.

The antiſcorbutic virtue of the fir was, like many other of our beſt medicines, accidentally diſcovered in *Europe (k)*. When the *Swedes* carried on a war againſt the *Muſcovites*, almoſt all the ſoldiers of their army were deſtroyed by the true marſh or marine ſcurvy, having rotten gums, rigid tendons, *&c.* But a ſtop was put to the progreſs of this diſeaſe, by the advice of *Erbenius* the King's phyſician, with a ſimple decoction of fir-tops; by which the moſt deplorable caſes were perfectly recovered, and the reſt of the ſoldiers prevented from falling into it. It alſo proved an excellent gargle for the putrid gums. From thence this medicine came

(g) Bruneri tract. de ſcorbuto.

(b) See part 3. chap. 1. *Olaus Magnus.*

(i) See part 3. chap. 2.

(k) Vid. Moellenbroek de arthritide vaga ſcorbutica, p. 116. *Etmulleri opera*, p. 2. ſaid by ſome to have occurred in the army of *Uladiſlaus* King of *Poland*.

into

into great reputation, and the common fir, *picea major*, or *abies rubra*, was afterwards called *pinus antiſcorbutica*. *Pinus ſylveſtris*, the mountain-pine, has likewiſe been found highly antiſcorbutic, of which a late accident has furniſhed a convincing proof. In the year 1736 two ſquadrons of ſhips fitted out by the court of *Ruſſia*, were obliged to winter in *Siberia*. One commanded by *Demetrius Laptiew*, not far from the mouth of the river *Lena*, was attacked by the ſcurvy. The men in their diſtreſs by chance found near them this tree growing in the mountains, and experienced it to have a moſt ſurpriſing antiſcorbutic virtue. At the ſame time while *Alexius Tſchirikow* was paſſing the winter in the river *Judoma*, where it runs into the river *Maja*, a conſiderable number of his men were dreadfully afflicted with that diſeaſe. After various fruitleſs attempts to diſcover a remedy able to put a ſtop to this cruel diſaſter, he at length accidentally hit alſo upon the pines which grew plentifully on the mountains, by which all his men were recovered in a few days. In ſome the medicine proved gently laxative, in others it affected the body ſo mildly, that its operation was ſcarce ſenſible *(l)*.

I am inclined to believe, from the deſcription given by *Cartier* of the *ameda* tree, with a decoction of the bark and leaves of which his crew was ſo ſpeedily recovered, that it was

(l) Gmelin flor. Sibiric. p. 181.

the large ſwampy *American* ſpruce tree *(m)*. For although the pines and firs, of which there is a great variety, differ from each other in their ſize and outward form, the length and diſpoſition of their leaves, hardneſs of wood, *&c.* yet they ſeem all to have analogous medicinal virtues, and great efficacy in this diſeaſe. The ſhrub ſpruce, of that ſort vulgarly called the *black*, which makes this moſt wholſome drink, affords a balſam ſuperior to moſt turpentines, though known only to a few phyſicians.

A ſimple decoction of the tops, cones, leaves, or even green bark and wood of theſe trees, is an excellent antiſcorbutic: but it will I am apt to think become much more ſo when fermented, as in making ſpruce beer; where the *moloſſes* contributes, by its diaphoretic quality, to make it a more ſuitable medicine. By carrying a few bags of ſpruce to ſea, this wholſome drink may be prepared at any time. But where it cannot be had, the common fir-tops uſed for fuel in the ſhip, ſhould be firſt boiled in water, and the decoction afterwards fermented with *moloſſes*, in the common method of making ſpruce beer; to which a ſmall quantity of wormwood and horſe-radiſh root (which it is eaſy to preſerve freſh at ſea) may be added. It ought to be

(m) See part 3. chap. 1. *Hackluit*'s collection of voyages, vol. 3. p. 225. Some have believed it to be the ſaſſafras, others the white thorn; but, in his third voyage, he mentions the white thorn, and makes the *ameda* to be three fathom in circumference.

drunk

drunk when pretty briſk or new, and taken in ſufficient quantity, which will be found the moſt efficacious antiſcorbutic perhaps of any fermented liquor, as being of a diuretic and diaphoretic quality. In extremity tar-water may be tried, fermented in like manner; by which it will certainly become much more antiſcorbutic.

We come now to obſerve what treatment is proper for convaleſcents, or thoſe who are recovering from tedious fits of ſickneſs, by which they have been greatly exhauſted and weakened. Here the prevention of the ſcurvy will depend much upon two articles, *viz.* a proper diet and exerciſe. The former muſt be adapted to the weakneſs of their digeſtive powers, and the ſharp acrimonious condition of the blood and juices. The latter muſt be ſuited to the debilitated ſtate of their body. We find, that when people in this condition at land, and much more ſo in the moiſt ſea-air, are put directly upon a groſs viſcid diet, they are very apt to become ſcorbutic. For theſe, in the firſt place, we would recommend an allowance of flour inſtead of ſalt beef and pork; and (ſea-biſcuit being too groſs food for them) this muſt be well leavened, and baked into freſh bread, inſtead of being cooked into puddings and dumplings, as is common; which will be found an excellent antiſcorbutic; and is, together with vegetables, eagerly longed for by ſcorbutic perſons. It may appear a direction not eaſily to be com-

plied with, to people unacquainted with ſea-conveniencies. But many ſhips, eſpecially all ſhips of war, have an oven; and it is a practice with moſt captains, to have their own bread baked twice or thrice a-week, while at ſea. When the patient is extremely weak, a little of this freſh bread ſhould be boiled in water, and made into panada; adding a few drops of the juice or extract of lemons, and a ſpoonful of wine.

The other parts of diet ſhould be oat-meal and rice gruels, flumery, roaſted or ſtewed apples, if they can be got, ſtewed barley, with raiſins or currants, ſago and wine, &c. but particularly the pickled green cabbage, and ſmall onions, boiled with the portable ſoop made weak. Moſt food and drink ought to be acidulated with the orange or lemon-juice; which at ſuch times proves highly grateful, both to the palate and ſtomach of the patient; who by degrees, as his appetite, but eſpecially as his ſtrength increaſes, is to be indulged with more ſolid food: though he would do well to abſtain for ſome time from groſſer animal ſubſtances, and take no other reſtorative but wine, with the proper vegetable and lighteſt farinaceous ſubſtances. A caution is here requiſite, that to the convaleſcents nouriſhment ſhould be given often, but in a ſmall quantity at a time, ſo as not to oppreſs the organs of digeſtion.

It is likewiſe a matter of great importance, that the body weakened by preceding ſickneſs, be

be by degrees habituated to exerciſe. Nothing can be more inhumane, than to oblige a poor weak man to undergo more fatigue than his ſtrength can bear; nor any thing more prejudicial to his recovery, than, under the notion of preſerving him from the ſcurvy, to force him too ſoon to do the ſhip's duty. On the other hand, a total neglect of exerciſe is peculiarly productive of this diſeaſe. The rule then is, to proportion the continuance and degree of it, to the ſtrength and condition of the patients; to begin with the moſt gentle and eaſy at firſt, and proceed gradually to the more violent, as they acquire ſtrength. Thus, after being accuſtomed to ſit up ſome hours through the day in bed, they are then to be allowed to get out of it, and continue ſo, as long as their ſtrength, without great wearineſs or fatigue, will permit. They may next be put into a ſling hung below the forecaſtle, or betwixt decks; which will affect them not only by cauſing a change of air, but at the ſame time give ſpirits and refreſhment. They will afterwards be able to bear riding on a croſs deal laid betwixt two cheſts, where the ſucceſſive concuſſions of the body will be more ſenſibly perceived. And it is to be remarked, that as weak perſons at land generally find the greateſt benefit from exerciſe in a coach, chaiſe, or on horſeback; ſo the convaleſcents in a ſhip, eſpecially ſcorbutical people, will receive much more advantage from this exerciſe, than from walking,

running, or any kind of muſcular motion, in which a great exertion of ſtrength is required. The reaſon ſeems to be, becauſe theſe latter are attended with a waſte and diſſipation of ſpirits; and are generally followed with wearineſs and fatigue; whereas, by the frequent ſucceeding agitations of a jolting machine, the circulation is promoted, the fibres of the body ſtrengthened, and the weakened animal functions invigorated, without any conſiderable loſs of ſpirits, which ſuch people cannot well bear.

Theſe and the like exerciſes are abſolutely neceſſary to prevent the ſcurvy in thoſe who have hurts, ſprained joints, ulcers on their legs, and other ailments, which confine them below, and diſable them from walking; in which caſe they ſoon become ſcorbutic, when living on the groſs ſea-diet.

Others upon recovery may, at the ſame time they practiſe theſe exerciſes, be made to walk a little upon deck, ſo as not to over-fatigue themſelves; and afterwards be put upon ſuch duty as their condition will permit them to perform: having recourſe, if needful, to *elixir vitriol*, bitters, the bark, or ſteel, according as they may be requiſite to perfect their ſtrength and recovery. To which, however, nothing will contribute ſo much, and at the ſame time more effectually prevent the ſcurvy, as bodily exerciſe; which will be found to agree beſt with them when the ſtomach is not full, or rather juſt before meals. It is obſerved,

that

that when ſcorbutic people uſe no exerciſe, the diſeaſe advances very faſt upon them at ſea: therefore, if they can bear only the moſt gentle motions, theſe are often to be practiſed; and the body is not to be permitted continually to reſt, without ſome ſort of action. When confined to bed, frictions may be uſed upon their limbs and body. Let it however be remembered, that too violent exerciſe is as dangerous and pernicious in this diſeaſe as too little.

I proceed now to point out the means of correcting or removing many inconveniencies which occur at ſea, eſpecially thoſe which are obſerved to be productive of this malady. A moſt powerful and principal cauſe of which *(n)*, and indeed of many others at ſea, is the moiſture of the air, and conſequently the dampneſs of their lodging; eſpecially during a long continuance of thick cloſe weather, or a ſtormy and rainy ſeaſon. And this is found to be the moſt frequent cauſe of this fatal diſeaſe, whoſe effects are rendered ſtill more pernicious when combined with cold; theſe require in a particular manner to be guarded againſt. And they are either immediately to be corrected, or their effects and conſequences prevented.

As to the firſt: Although we cannot at once remove a perſon into another climate, or into the land-air; yet we can eaſily give to the air he breathes, a more ſalutary quality,

(n) See Part 2. chap. 1.

by rendering it at any time warmer or colder, moiſter or drier, as the exigency of the caſe and circumſtances may require. I obſerved elſewhere *(o)*, that the noxious qualities of the moiſt air at ſea were greatly heightened by being confined in ſo cloſe a place as a ſhip, without a ſucceſſion, or freſh ſupply of it. But as that inconvenience is guarded againſt by the uſe of *Sutton*'s machine (or the much more effectual and excellent invention of ventilators by the reverend Dr. *Hales*) *(p)* which extracts all ſuch foul and putrid air, and thus will prevent many infectious malignant fevers cauſed from thence; ſo there ſeems nothing wanting to make it likewiſe an excellent preſervative againſt the ſcurvy, but that it ſhould correct the moiſture of the ſea-air, and dry or warm it betwixt decks when needful.

This I conjecture it might be made to do by ſome additional contrivances, which may invert its operation; that is, inſtead of drawing up the air from below, the air warmed by the fire in the gallery or fire-place, may be forced betwixt decks through its pipes when requiſite. I mention it only (for experiments alone muſt make this improvement, and with ſuch caution as to prevent detriment by it) to induce ſomething of this kind to be thought of by proper judges. If the additional machinery were but ſmall, and not

(o) Part 2. chap. 1.
(p) See his book on ventilators.

incom-

incommodious in the ſhip, the advantages derived from it would be very great. Theſe are evident from what has been ſaid in diſcourſing on the cauſes of the ſcurvy *(q)*. It muſt prove highly ſerviceable in cold climates, and in northern voyages in the winter (where the ſailors not only become terribly ſcorbutic, but are often chilled to death with the cold, and at other times have their limbs mortified) if, by a ſimple contrivance of this ſort, the fire uſed for dreſſing their victuals, could be made to warm them even when in bed. When the *French* men of war winter in *Canada*, or *Lewiſburg*, they have always a ſtove between the decks.

Fire made with any of the aromatic woods, or even with common fir or pine, juniper, and the like, effectually corrects this diſpoſition of the air, and at the ſame time renders it more ſalutary in other reſpects. It is obſervable, that betwixt the tropics, the rainy ſeaſons prove the moſt unhealthy and dangerous, not only at land, but in ſhips; giving riſe to malignant fevers, ſcurvies, *&c.* In this caſe, without any inconvenience or danger, a clear open fire, properly ſecured, when in harbour, might be lighted betwixt decks, to ſtand upon the hatchways in a ſtove; which would greatly purify the air, and deſtroy its hurtful moiſture, without much increaſing the heat, if burnt in an open hatchway. There is certainly leſs danger, nay, leſs

(q) Chap. I.

heat,

heat, attending a fire burning for an hour or two in the day there, guarded by a centinel, than having fifty or ſixty candles lighted in an evening; or burning them conſtantly night and day in the orlope, and other dark places: whence ſuch parts of the ſhip are continually replete with the nauſeous effluvia of rank corrupted tallow. It would ſeem indeed no difficult matter, to convert even theſe into medicinal preſervatives againſt the ſcurvy, and other putrid diſeaſes from bad moiſt air, by the addition of ſome proper aromatic in their compoſition. The burning of ſpirits will be of ſervice in the ſick-apartment. The captains, or thoſe who can afford them, will find the myrtle wax candles the beſt for uſe in a moiſt ſea-air.

Next to be conſidered, are the beſt means of preventing the effects and ill conſequences of ſuch air, when not corrected by the methods propoſed.

Fire, as before obſerved, is the moſt certain conſumer and drier of humidity. We moreover find, that the exhalations of aromatics, though, properly ſpeaking, they do not dry up moiſture, yet prevent the pernicious effects of it upon the human body, by diffuſing through the air a ſubtile acid, of an antiſeptic and aſtringent quality, oppoſite to the putrid and relaxing tendency of moiſture. Thus we often obſerve many aſthmatic perſons greatly affected with a moiſt wind, and in a damp ſeaſon hardly able to breathe; but upon throw-

throwing a little benzoin, or the like aromatic gum, on a red-hot iron, by which their chamber is well perfumed, and the air replete with theſe aromatic particles, they are ſenſible of relief, and breathe much more freely. So here I would recommend a moſt ſimple and eaſy operation, to be performed in ſuch damp ſeaſons in a ſhip; which is, putting a red-hot loggerhead in a bucket of tar, which ſhould be moved about, ſo that all the ſhip, once or twice a-day, may be filled with this wholſome antiſeptic vapour.

Perſons for proper ſecurity, during a ſcorbutic and moiſt conſtitution of air, ſhould go well cloathed, and ſhift often with dry linen. Drineſs and cleanlineſs of body are excellent preſervatives againſt this malady. They ſhould uſe the fleſh-bruſh, or frictions with a dry cloth on their ſkin; eat a bit of raw onion, or a head of garlic, in a morning before they are expoſed to the rains and waſhings of the ſea. Whatever promotes perſpiration is uſeful; and perhaps nothing will do it more effectually at this time than a raw onion. Nor ought theſe farther precautions to be omitted, of uſing proper exerciſe in the day, and having their bedding kept always dry, not binding it up cloſe together till ſufficiently aired and dried.

When they are threatened with the approach of this diſeaſe, they ought, at going to bed, to promote a gentle *diaphoreſis*, by draughts of water-gruel and vinegar, with the

the addition of lemon-juice, or the extract. They ſhould uſe plenty of muſtard and onions with their victuals; and may then indulge more freely in the uſe of fermented vinous liquors, *viz.* cyder, beer, and wine: but when of neceſſity obliged to drink ſpirits, they ought always to dilute them a little with water, and acidulate them with the acid of oranges or lemons. Theſe directions will preſerve ſeamen not only from the ſcurvy, but from many other diſeaſes, as coughs, catarrhs, *&c.* ariſing from an obſtructed perſpiration in a moiſt air.

The water and proviſions being often in ſuch an unſound and corrupt condition, as may be ſuppoſed to increaſe the virulence of this evil, it will not be improper to add ſome conſiderations for preventing and remedying theſe inconveniencies.

Water is with difficulty preſerved ſweet at ſea *(r)*; and ſometimes cannot even be procured wholſome at places where ſhips may touch. There are two ſorts of bad water. The firſt is, putrid and ſtinking; the other, a hard heavy water that is not putrid, but which will not incorporate with ſoap, or break peas when boiled in it. Both are very unwholſome.

Water at ſea will ſooner or later putrify, according to its various contents, and the man-

(r) See Dr. *Alſton*'s excellent method of preſerving water good and wholſome at ſea by quick-lime, part 3. chap. 2. alſo Dr. *Hales*'s curious philoſophical experiments, and his directions to preſerve water and proviſions at ſea.

ner

ner in which it is kept. It has been experienced, that, by fuming the caſks with burning brimſtone, water will keep longer ſweet. Some add a little oil of vitriol to it; which likewiſe preſerves it a longer time from putrifying. It is a common practice, and a very good one, to throw a little ſalt into water while warming; and as it grows hot, there will ariſe a thick feculent unwholſome ſcum, which is carefully to be taken off as it caſts up. And this ſhould always be done in boiling peas and oat-meal.

When the water is become putrid and ſtinking, one manner of ſweetening it is, by taking out the bungs of the caſks, expoſing it to the air, and ſhaking, and pouring it from one veſſel into another. Another way is, by letting it quickly come to boil; taking care not to boil it too long, which would expel the moſt active parts of the water. This will ſtill be rendered ſweeter, and more wholſome, when a little of the juice or extract of lemons is added to it; which is much ſafer for common uſe, than the mineral acids of *vitriol*, or ſalt, ordered by ſome on this occaſion. The acid will likewiſe contribute to precipitate the earthy particles of the water, and the various *animalcula* with their ſloughs, now deſtroyed by the boiling.

But as this may be found troubleſome to do for a whole ſhip's company, there is another method of ſweetening putrid water. Some times,

times, as is obſerved by my learned friend Dr. *Home* (*s*), by keeping ſuch water cloſe and warm in a large veſſel, it will become fit for uſe when the proceſs of putrefaction is once over; by which the noxious and putreſcent particles having been made quite volatile, will fly off of themſelves; as is often the caſe of the *Thames* water. A large caſk of ſtinking water cloſely bunged up, ſhould be put into the galley, and kept in a degree of warmth ſufficient to promote this proceſs of putrefaction: the effect of which will be, that the heterogeneous putreſcent particles rendered thus volatile, will all quickly eſcape; and the putrefaction by this means being ſtopt, the water becomes wholſome, and fit for uſe.

Beſides this putrid water, ſailors are often obliged to uſe, for want of better, a hard water, as it is called, replete with foreign, ſaline, and terreſtrial particles; which is found to be very unwholſome, though freſh and ſweet. To make this wholſome and ſalutary, the ſtone filtre uſed on board ſeveral ſhips is very proper, where the water does not abound with vitriolic or marine ſalts. But its operation is tedious, and it can never paſs a ſufficient quantity for the uſe of a ſhip's company. Sand is the fitteſt body for ſeparating theſe heterogeneous and unwholſome particles from water. Upon this occaſion I muſt again refer to

(*s*) In his ingenious eſſay on the *Dunſt* Spaw, p. 119.

the ingenious eſſay on the *Dunſe* Spaw *(t)*. As this method however is troubleſome and tedious; for if the ſand is ſea-ſand before it is made uſe of, it muſt be purified of all its ſalts: and it has been found that the ſand when uſed for ſome time loſt its power of ſoftening water, the Doctor has publiſhed an eaſy, cheap, and expeditious method of ſoftening all hard waters by means of potaſh or alcaline ſalts, which convert the noxious ſaline particles into ſalutary nitrous ſalts, and precipitate the earthy parts of theſe ſalts which occaſion hardneſs in water *(u)*.

When the proviſions of beef and pork are putrid and rancid, it will be moſt adviſable not to eat of them; or at leaſt to correct their

(t) P. 120. The *Auſtrian* army, when incamped in *Hungary*, find no good water, unleſs when on the banks of ſome great river. So, when obliged to uſe lake-water, they purify it in this manner. A long ſmall boat is divided into ſeveral different apartments by croſs partitions. They fill them all, except the laſt, with ſand. The boat is put into the lake. A hole level with the ſurface of the water is made in the end of the boat, which lets the water into the firſt diviſion; from this it gets into the ſecond, by a hole made in the bottom of the firſt partition; from the ſecond it runs into the third, through a hole in the top of the ſecond partition; and ſo alternately above and below, that it may be obliged to paſs through all the ſand. At the top of the laſt diviſion there is a pipe, through which the water comes, at pleaſure, as pure as from a fine ſpring. And thus ſeamen when abroad meeting with ſuch water, may purify even the hardeſt kind of it. And for the ſame purpoſe in a houſe he propoſes ſome caſks divided in the middle, and filled with ſand; into the firſt of theſe diviſions the water may be thrown as into a ciſtern; the caſks ought here to be joined by pipes; and by making it thus circulate through eight or ten diviſions filled with ſand to the top, a pure ſpring may be had any where.

(u) See his Eſſay on Bleaching.

bad

bad qualities, by uſing at the ſame time plenty of vinegar, oranges, lemons, and vegetables. I am afraid any method that might be propoſed to ſweeten putrid fleſh, will be found not eaſy to be put in execution at ſea.

There are ſeveral ways generally known of recovering ſpoiled beer, wines, and other fermented liquors; and as theſe liquors are all of them antiſcorbutic, they are well worth preſerving. Yeaſt ſhould be carried to ſea for this and other purpoſes. When it has grown ſtale by keeping, a little flour, ſugar, ſalt, and warm beer, are to be mixed with it; or even hot water and ſugar only. By adding to it the grounds of ſtrong beer, and letting the mixture ſtand a little before the fire, it will ſerve either to work beer, or bake bread. In caſe there is no yeaſt on board, honey, ſugar, leaven, or moloſſes, may be uſed to renew the fermentation of liquors.

The dry proviſions, oat-meal, peas, and flour, are apt to be corrupted and ſpoiled by weevils, maggots, and by growing damp and mouldy. Theſe deſtructive vermine may be killed by the fumes of brimſtone in a cloſe place. But even then the weevils, when eaten, are found to be very unwholſome, and are ſaid to have ſuch a cauſtic quality, as, when applied to the ſkin in the form of a poultis, to raiſe bliſters like the *cantharides*. When no better proviſions can be procured, the flour, oat-meal, or peas, ſhould be put in a heap, and then theſe vermine will come to the

the top of it; ſo that a great number of them may be taken away, and ſifted out with the duſt. The parcel is to be ſtirred and heaped again, until as many of them as poſſible are removed. The groats and peas may be turned over into a wire-ſieve, which will let the duſt and weevils paſs through it.

Sound good bread is a moſt important article at ſea. The biſcuit, when mouldy and ſpoiled, ſhould be put into a warm oven, or under the fire-place, till the putrid moiſture is quite exhaled, and the *animalcula* deſtroyed. Theſe are afterwards to be well beat out of it, and then it may be eat dipt in vinegar. Cloſe caſks preſerve biſcuit and other dry proviſions beſt; and all poſſible care ſhould be taken to keep them dry, and free from dampneſs.

CHAP. V.

The cure of the diſeaſe, and its ſymptoms.

IF proper precautions were taken for the prevention of this diſeaſe, and the rules which have been laid down for that purpoſe were complied with, we ſhould ſeldom have occaſion to meet with it in a high degree either at ſea or land. It is indeed difficult to perſuade ſome to practiſe, when in health, what is neceſſary to preſerve ſo valuable a bleſſing. All mankind have not the benefit of a pure wholſome air, warm dry lodgings,

with proper conveniencies to guard againſt the inclemency of different weather and ſeaſons. Many are alſo of neceſſity obliged to live upon ſuch groſs food as is not properly adapted to their digeſtive powers, to their conſtitution, and the exerciſe they uſe, ſo that from thence they may be apt to contract this evil. It is proper therefore to preſcribe the cure of it, as well as the prevention.

Indeed the general method of it, and the beſt remedies, have already been taken notice of in the former chapter. Experience ſhews, that the cure of the adventitious ſcurvy is very ſimple, *viz.* a pure dry air, with the uſe of green herbage or wholſome vegetables, almoſt of any ſort; which for the moſt part prove effectual.

Hence the firſt ſtep to be taken towards its removal, when contracted either at ſea or land, is change of air. We are upon this occaſion informed by ſeveral authors, of an old cuſtom practiſed in ſome parts of *Norway* for the recovery of ſcorbutic people. They expoſe them in a neighbouring deſart iſland in the ſummer-ſeaſon, where they live chiefly on cloud-berries; and it is remarked, that, by eating plentifully of theſe, together with the change of air, they are reſtored to perfect health in a very ſhort time. In that country, the fruits gathered by the diſeaſed themſelves, are reputed of the greateſt virtue. It no doubt is the caſe, as by this means the patient breathes the ſalutary country-air in the

the open fields. Thus a free and pure country-air, with ſuch moderate exerciſe as at the ſame time conduces to the agreeable amuſement of the mind, is requiſite *(a)*.

Their food ſhould be of light and eaſy digeſtion. The moſt proper is, broths or ſoops made with freſh meat, and plenty of vegetables, *viz.* cabbage, coleworts, leeks, onions, *&c.* Freſh and well-baked wheat bread muſt be given them. Salads of any kind are beneficial; but eſpecially the mild ſaponaceous herbs, dandelion, ſorrel, endive, lettuce, fumitory, and purſlain. To which may be added, ſcurvy-graſs, creſſes, or any of the warmer ſpecies of plants, in order to correct the cooling qualities of ſome of the former; as experience ſhews the beſt cures are performed by a due mixture of the hotter and colder vegetables. Summer-fruits of all ſorts are here in a manner ſpecific, *viz.* oranges,

(a) Mr. Murray.—What may be called *ruſtication*, is the moſt beneficial exerciſe. When I was at the iſland of *St. Thomas*, all the ſcorbutic patients who could bear with being moved, were almoſt every day ſent on ſhore by day-break. Thoſe who could not walk were carried a little way into the woods, where they were laid at their eaſe in the ſhade, while thoſe who could walk were allowed to range about the woods, and directed to crop the leaves of the trees and ſhrubs as they went along. Such herbs as they found of a fragrant and aromatic ſmell, were put into bags. So ſoon as the heat of the day began to advance, they were all carried aboard. There they had water-gruel prepared for breakfaſt; their pained or rigid limbs were well fomented with a decoction of the fragrant herbs which they had pluckt; afterwards they took their lime-juice and a ſmall quantity of rum well diluted; then went to bed for a few hours, where ſleep ſucceeding fatigue, contributed its ſhare towards the cure.

lemons, citrons, apples, &c. For drink, good ſound beer, cyder, or Rheniſh wine, are to be preſcribed.

Thus, we have numberleſs inſtances of people, after long voyages, by a vegetable diet and good air, miraculouſly, as it were, recovered from deplorable ſcurvies, without the aſſiſtance of many medicines. For which indeed there is no great occaſion; provided the green herbage and freſh broths keep the belly lax, and paſs freely by urine, ſweat, or perſpiration. But when otherwiſe, it will be neceſſary to open the belly, every other day or ſo, by a decoction of tamarinds and prunes, adding ſome diuretic ſalts; and upon the intermediate days, to ſweat the patient in a morning with camphorated boluſes of theriac, and warm draughts of *decoct. lign.*; and, as has been uſual in ſome of our hoſpitals, give twelve or fifteen grains of *pil. ſcillit. pharm. Edin.* twice or thrice through the day.

But it is here to be obſerved, that though the recovery of ſuch perſons ſeems promiſing and ſpeedy at firſt, yet it requires a much longer continuance of the vegetable diet, and a proper regimen, to perfect it, than is commonly imagined. There are many inſtances of ſeamen who have been ſent from the hoſpitals, after having been three weeks or a month on ſhore, to their reſpective ſhips, who in all appearance were in perfect health; yet, in a ſhort time after being on board, relapſed,

lapſed, and became highly ſcorbutic. It were to be wiſhed, that either a longer continuance was allowed ſuch men at the hoſpital, or that their cure was rendered more perfect by a ſweating courſe.

It is indeed frequently experienced, that people once deeply infected, are extremely apt to relapſe into ſymptoms of this diſeaſe, in different periods of their life afterwards. There are likewiſe ſome particular conſtitutions, who, from the peculiar tendency and diſpoſition of their humours to the ſcorbutic corruption, are, from much ſlighter cauſes, more liable than others to fall into the ſcurvy. In ſuch caſes theſe people, in order to purify their blood from this deep-ſeated ſcorbutic taint or tendency, beſides the diet and regimen before recommended, ſhould alſo have recourſe to other medicinal helps; ſome of the beſt of which have been already mentioned in the foregoing chapter.

But in this place I ſhall more particularly deliver,

1*ſt*, The method proper to remove a ſcorbutic habit of body, whether acquired by a deep infection, or conſtitutional.

2*dly*, The different treatment of ſcorbutic patients, adapted to the various ſymptoms of their diſeaſe; when the urgency of ſuch ſymptoms requires a particular attention; but eſpecially when the general method of cure cannot be complied with.

3*dly*, I ſhall obſerve what remedies have been recommended upon good authority, and are uſed in different countries.

And, 4*thly*, Conclude with ſome neceſſary cautions and obſervations.

To begin with the *firſt* of theſe; In order thoroughly to ſubdue a ſcorbutic taint, the phyſical intentions muſt be, to keep the outlets and emunctories of the body open and clear, for the gentle evacuation of the ſcorbutic acrimony (*viz.* the belly, urinary paſſages, and excretory ducts of the ſkin); mean while, the remaining maſs of humours is rendered mild, ſoft, and balſamic, by proper antiſcorbutic food and medicine. And it is remarked, that all the above evacuations are moſt ſucceſsfully promoted, when the medicines for theſe intentions are joined with antiſcorbutics.

Here milk of all ſorts, where it agrees with the conſtitution, is beneficial; as being a truly vegetable chyle, an emulſion prepared of the moſt ſucculent wholſome herbs: but whey, by reaſon of its more diuretic and cleanſing quality, is rather preferable. And upon this occaſion the *ſal polychreſt.* will be found a very uſeful addition, as it is a mild purgative, an excellent diuretic; and when taken in a ſmall quantity, well diluted, evacuates plentifully, either by perſpiration or urine, according as its operation is directed to the ſkin or kidneys, by exerciſe, lying in bed, or keeping the body warmer or cooler.

Goats,

Goats, of all animals, afford the richeſt whey, poſſeſſed of the greateſt antiſcorbutic virtues. It contains a moſt noble, reſtorative, vegetable balſam, which in a ſingular manner ſweetens and corrects the ſcorbutic acrimony.

The *ſucci ſcorbutici* of the *Edinburgh* and *London pharmacopœia's*, where the volatile acrimony of the hotter ſpecies of plants is qualified by a due quantity of the juice of *Seville* oranges, are likewiſe proper in their ſeaſon. They will be experienced yet more ſerviceable, when made farther diuretic and cleanſing, by being clarified with whey. Beſides taking them in this manner through the day, the patient ought to be ſweated in a morning, twice or thrice a-week, by draughts of the ſaid juices mixed with ſack-whey.

This method cannot be ſufficiently recommended. It is an evacuation, which, of all others, ſcorbutic perſons bear the beſt, and from which they find the greateſt benefit; what nature pointed out to the northern *Indians* for the cure of this their endemic evil *(b)*, and which experience confirms to be a moſt efficacious remedy. It is practiſed with remarkable ſucceſs by the ſurgeons at the Cape of *Good Hope*, who have the greateſt opportunity of treating ſcorbutic ſeamen *(c)*; is recommended by the firſt and beſt writers

(b) Vid. Part 3. chap. 1.
(c) Vid. *Kolben*'s account of the Cape of *Good Hope*.

on this diſeaſe *(d)*; and ſeem to have been the moſt uſual way of their giving theſe juices.

There are, beſides, other herbs, whoſe juices are here of eminent virtue. Such eſpecially, from their ſaponaceous and mild aperient quality, are *dens leonis* and *fumaria*. And an antiſcorbutic inferior to none, is the juice of the tender ſprouting tops of green wheat, in the months of *June* and *July*, mixed with the juice of *Seville* oranges.

But, during all theſe courſes, ſcorbutic habits will find great benefit by warm baths (provided there be no danger from a hæmorrhage) in which the aromatic and fragrant plants have been infuſed, *viz.* roſemary, marjoram, thyme, *&c.* and theſe are preferable to the uſual manner of ſweating them in ſtoves or bagnios *(e)*.

In the winter-time, for the cure of this diſeaſe, genuine ſpruce beer, with lemon and orange juice, is to be preſcribed; or an antiſcorbutic ale by infuſion of wormwood, *rad. raphani*, muſtard-ſeed, and the like, made gently laxative by addition of ſenna. It muſt be drunk when pretty freſh or new. But the ſpring is the moſt favourable ſeaſon for a perfect recovery from a ſcorbutic habit. The

(d) Wierus, Albertus, &c.

(e) Murray.—There is a method of ſweating, I do not obſerve you have taken notice of, and which is ſaid to have proved ſerviceable to ſome of the unhappy men in the unfortunate Admiral *Hoſier*'s ſquadron at the *Baſtimentos*, *viz.* burying the ſcorbutic limbs in hot ſand.

learned

learned *Van Swieten* ſays he has often ſeen whole families cured of the ſcurvy in *Holland*, by the uſe of an ale, for common drink, a conſiderable time, in a caſk of which ſome heads of red cabbage cut ſmall, twelve handfulls of water-creſſes or ſcurvy-graſs, and a pound of freſh horſe-radiſh root had been previouſly infuſed *(f)*.

Having ſaid this much on the cure of the diſeaſe in general, I come, *ſecondly*, to obſerve what is proper to be done for the relief and removal of its moſt urgent ſymptoms.

When firſt the patient complains of an itching and ſpungineſs of the gums, with looſe teeth, either a tincture of the bark in brandy, or aluminous medicines will be found ſerviceable in putting a ſtop to the beginning laxity of theſe parts *(g)*. But, upon the putrefaction increaſing, a gargle is to be uſed of barley-water, and *mel roſat.* acidulated with ſome of the mineral acids. The *ſp.* or *elix. vitriol.* is generally preſcribed; but ſome have imagined *ſp. ſalis* leſs hurtful to the teeth. The quantity of the acid muſt be proportioned to the greater or leſſer degree of putrefaction in the parts. The *fungus* muſt be often removed, or, if needful, cut away; and,

(f) Commentar. in Aphor. Boerh. 1160.

(g) Lac is of great eſteem in *Germany* for laxity and ſponginels of the gums. For this uſe the lac is boiled in water with the addition of a little alum, which promotes its ſolution; or a tincture is made from it with rectified ſpirit. Vid. New Diſpenſatory, or improvement of *Quinſy* on the article Lacca.

by frequent gargariſing, the mouth kept as clean as poſſible. Where the ulcers appear deep and ſpreading, they are to be checked with a touch of *ol. vitriol.* or *ſp. ſalis*, either by itſelf, or diluted, according as the patient bears it.

In a ſpontaneous ſalivation; or, as is much oftener the caſe, when a copious ſpitting has unfortunately been induced by ſome mercurial medicine, where immediate danger is apprehended, ſpeedy revulſion muſt be made from the ſalivary glands, by epiſpaſtics applied to different parts of the body, ſinapiſms to the ſoles of the feet and hams; and by opening the belly with clyſters, and ſuch gentle purgatives as operate only in the firſt paſſages. But the *impetus* of the blood, and colliquated humours, is here to be determined, particularly to the pores of the ſkin: a defect of perſpiration, generally attended with a ſtricture and ſpaſm on the *cutis* in ſcorbutic habits, being the true cauſe why the force of the mercury ſo powerfully falls upon the ſalivary glands. For this purpoſe, boluſes of *theriac*, with camphire, and *flor. ſulph.* are to be given, and repeated every four or ſix hours, in order to force a ſweat; which proves the beſt means of abating the ſtrength of the ſalivation, and reſcuing the patient from the danger of being choked by it. Gargles at the ſame time muſt be uſed, with *oxym. ſcill.* to attenuate the thick and viſcous *ſaliva*. When by this management the moſt threatning danger is

prevented, there generally continues, for a conſiderable time, a troubleſome ſalivation, with great putrefaction in the mouth; which it is very difficult to put a ſtop to. It may however be palliated by keeping the belly and urinary paſſages open with clyſters, or by diuretic and gentle phyſic; avoiding all ſtrong cathartics, or whatever may farther promote the diſſolution of the blood. Inviſcating and glutinous medicines are ſometimes ſerviceable, *viz. gum arabic, ichthyocolla, &c.* diſſolved in common drink. Aſtringent gargariſms of alum, and a decoction of the *cortex quercûs*, are indiſpenſably neceſſary: as alſo the *cort. peruv.* and *elixir vitriol.* taken inwardly. Mean while, the ſtrength of the patient muſt carefully be ſupported by warm mulled wines, *&c.* Such perſons, when much exhauſted, are to be confined altogether to a milk and vegetable diet.

When the legs are ſwelled and œdematous, gentle frictions are to be uſed at firſt, with warm flannel, or woollen cloths charged with the fumes of *benzoin.* and amber, or any other of the aromatic gums; provided the ſwelling be ſmall, ſoft, and not very painful; rolling up afterwards with an eaſy bandage from below upwards. But if the legs are much ſwelled, ſtiff, and painful, they muſt be fomented with a warm diſcutient fomentation; which will afford ſome momentary relief, without putting a ſtop to the progreſs of the ſwelling: or what I have found preferable,

able, is the ſteam of the fomentation received by the member well covered round with a blanket or cloths. And this operation muſt be repeated night and morning. It is generally followed with remarkable ſuppleneſs and eaſe in the ſtiff, painful, and contracted joints. Upon this occaſion, I have indeed often preſcribed the ſteam of warm water only, with the addition of a little vinegar, or crude *ſal ammoniac*. After receiving the fume on their joints cloſely covered up for half an hour, they are to be anointed with *ol. palmæ*. If ſuch ſwellings are not removed ſoon after the patient is put upon a vegetable diet, the limb ſhould be ſweated by burning of ſpirits, or with bags of warm ſalt.

Ulcers on the legs, or any other part of the body, require pretty much the ſame treatment, *viz.* very gentle compreſſion, in order to keep under the *fungus*, and ſuch antiſeptic applications as have been recommended for the putrid gums, *viz. mel roſat.* acidulated with *ſp. vitriol. ung. Ægyptiac, &c.* But nothing will avail where the patient cannot have vegetables or fruits *(b)*.

In dangerous hæmorrhages from theſe ulcers, or from the gums, noſe, *&c.* the mineral acids, *viz. ſp.* or *el. vitriol.* are to be given, and often repeated, in ſmall quantities at a time, ſo that they may more certainly and eaſily enter the lacteals, and get into the

(b) Murray.—I have applied a ſtrong tincture of the bark, and found it of great benefit lately in ſome ſcorbutic ulcers.

blood;

blood; together with ſmall doſes of the *cort. peruv.* when it agrees with the ſtomach. Theſe likewiſe, with red wine, are the principal medicines to be relied upon in their putrid and colliquative fevers.

For pain of the limbs, in the ſmall of the back, and breaſt, and univerſally in moſt of their pains, whether fixed or wandering, the *oxym. ſcill.* is to be adminiſtered in a warm diaphoretic mixture; where wine muſt ſupply the place of a ſpirituous cordial: and the patient, upon going to bed, ſhould, by warm draughts of water-gruel, with vinegar, or, in place of the latter, the *acetum theriacale*, endeavour to force a ſweat. But moſt of theſe complaints yield readily to the general method of cure, and can only be palliated until that is undergone *(i)*.

There

(i) Extract of a Letter from Mr. Murray.

N. B. The letters *(a)*, *(b)*, *(c)*, *(d)*, refer to ſome remarks ſubjoined.

Untoward fortune has too often placed me among a number of ſcorbutic patients, where vegetables and proper diet, and even many neceſſary medicines, were wanting, and where the very elements were our enemies; and I have ſpent many melancholy hours conſidering what was beſt to be done to overcome this enemy, and ſtop the progreſs of this often fatal, and always loathſome diſtemper. And although I have ſeldom cured my patient without vegetables; yet the relief I have given to many, amply rewarded my labour, and the reflection to this day gives me pleaſure. I ſhall firſt give you my method in general, and then I can produce an inſtance of its ſucceſs.

Many at the time had a miliary fever, which I then judged to be purely ſcorbutic. But, ſince the receipt of your laſt letter, I have altered my opinion; and ſubmit to your deciſion, that there is no ſuch thing as a fever that may be ſo termed.

I was

There remain two ſymptoms of this diſeaſe, which are, of all others, the moſt obſtinate to remove, even though the patient enjoys the benefit of the pureſt air, with the moſt proper antiſcorbutic food and medicines. Theſe are, the antiſcorbutic dyſentery in ſome; and in others, a hard bound cough, accompanied with *dyſpnœa*, pain and diſorders in the

I was always averſe to bleeding, for the reaſons you give: yet if the ſcurvy was the primary diſeaſe (as I then judged it) preceded by high febrile ſymptoms, and the habit was originally found or plethoric, I never obſerved any hurt from the loſs of a ſmall quantity of blood; which made a ſucceeding vomit always more ſafe; and this was followed by a purge, either cooling or warm, as ſymptoms indicated. Of the firſt ſort were the purging ſalts, with *ſal tartar.* or *tartar. vitriolat.* diſſolved in *decoct. lignorum*; or *infuſ. ſennæ et tamarindor. &c.* Of the laſt kind was *infuſ. amar. cum ſenna*, with the addition of a proper quantity of *cumella albæ*. And theſe were repeated occaſionally.

So ſoon as the ſymptoms of ſcurvy appeared, I diſcharged the uſe of ſalt meat; and confined my patients to the vegetable articles of diet on board, with what freſh victuals could be had from the officers tables. Their common drink was *decoct. lignor.* with their allowance of rum *(a)* put into it. The medical courſe I put them under, was for moſt part a neutral mixture of vinegar and *ſal tartar.*; of which I gave from two to four ounces twice or thrice a-day. *Spirit. mindereri* was beneficial to ſome; but the ſmall quantity of volatile ſalts or ſpirits carried to ſea, prevented that from being a general medicine. I have alſo given a mixture of *cremor* and *ſal tartar.* with ſucceſs, and ſometimes *tartar. vitriolat. (b)*. In violent ſcorbutic pains, diaphoretic anodynes of *aeet. theriacal.* or *theriac. andromach.* with *ſpirit. mindarer.* and *oxym. ſcillit.* I have found very ſerviceable: as likewiſe the laſt in particular for diſorders of the *thorax*. In viſceral obſtructions I gave the ferulaceous gums, with *gum. guajac.* ſoap, and *tartar* of *vitriol*; and ſometimes added only *gum. guajac.* and *tartar* of *vitriol* to the ſquill pills. The liver or ſpleen, or perhaps both, are ſometimes affected, eſpecially that lobe of the firſt, which ſtretches over the *pylorus*. Hence

I have

the breaſt. This laſt often ends in a conſumption: while the former, or flux, is very troubleſome to ſtop, and ſometimes alſo proves fatal.

Scor-

I have known violent pain at the pit of the ſtomach; and the hardneſs and pain I have ſometimes obſerved at the *fundus* of that *viſcus*, leave no doubt of the *pancreas* being alſo obſtructed. The meſenteric glands ſhare the ſame fate. Hence, as obſerved in your deſcription of this diſeaſe, towards the cloſe of it, from theſe obſtructions proceed violent colic-pains, jaundice, *&c.* all which I have ſeen; as alſo great tenſion of the *abdomen*, lienteries, *&c.* The appetite then begins to fail, the lungs are affected, reſpiration becomes contracted, the motion of the heart leſs vigorous, the circulation languid, and placid death cloſes the ſcene.

But to return to my practice at ſea: Where there was any topical pain, I fomented with a ley of wood-aſhes, in which was boiled camomile and elder flowers, wormwood, rue, *&c.* and lemon-peel, when it could be got. For the fungous gums, I made a powder of *bol. armen. alum. rup. tart. vitriol.* and *g. myrrh.* waſhing them with *infuſ. ſalviæ*; to which I added *alum. rup.* and *el. vitriol.* or *ſp. ſal.*; which ſerved alſo in ulcers, when I added honey. Theſe laſt I touched frequently with a rag dipt in *mel Ægyptiac. roſat. ſp. ſal. d. et tinct. myrrh.* I dreſſed ulcers of the extremities chiefly with *ung. Ægyptiac. mercurial.* and *liniment. arcæi* mixed together. When the patient was altogether free from feveriſh ſymptoms, I gave three or four ounces twice a-day, along with *decoct. lignorum*, of the *tinct. ad ſtomachios (c) Phar. Ed.*; to which I added muſtard-ſeed and *canella alba*. When he began to recover, I ſtrenuouſly inſiſted on his uſing exerciſe, and embrocated the contracted joints or tendons as you direct. Such was my general practice; and the following is an inſtance of its ſucceſs.

Benjamin Lovelay, aged 25 years, had a continual fever in *September* 1746; for which he was ſent to the hoſpital at *Louiſburg*; and from thence returned, to all appearance well, the 13th *October* following. On the 30th *November* (being taken ill the day before) he was feveriſh, and complained of violent pain in his bones and joints. Upon account of the ſcurvy being then epidemic, he was very ſparingly blooded, took a vomit, and was purged. Upon which the fever ſubſided a little; and there appeared a miliary eruption, ſoon after followed

Scorbutic diarrhœas at ſea are not ſuddenly to be ſtopt: as the acrimonious humour muſt ſome way or other be diſcharged; and it may as well paſs off by the guts as by any other

lowed with the ſeveral ſcorbutic ſymptoms in the greateſt degree; to which was added a violent pain in the pit of his ſtomach, inclining to the right ſide, often ſo violent as to make him ſhriek out. The ſymptoms continued upon the increaſe for ſome time; and at laſt he grew ſo bad, as to faint away upon the leaſt motion. The antiſcorbutic regimen above deſcribed was ſteadily purſued. His common drink was *decoct. lignor.* acidulated with *elixir vitriol.* His diet was water-gruel, rice, ſago with wine, and ſometimes a little freſh broth or meat from the officers table. The ſeveral forms of medicines already mentioned, were adminiſtered as ſymptoms required; and I think he had almoſt every ſymptom belonging to the diſeaſe, attended with feveriſhneſs, all along till the decline of the diſtemper; when I added aloes and *extract. gentian.* to his pills, and begun the uſe of the *tinct. ad ſtomachic.* The bile in moſt chronical diſeaſes, eſpecially in the ſcurvy, is defective either in quality or quantity, and ſomething muſt be given to ſupply its defects. The diſeaſe took a turn for the better in the beginning of *January*, and he returned to his duty on the 22d of *February* (*d*).

I ſhall uſe the freedom with my ingenious friend to make ſome remarks on his letter.

(*a*) Wine would probably have been better.

(*b*) The medicines were no doubt properly adapted in the caſes to which they ſeem to allude; which were fevers and ſcurvies: theſe ſaline neutral draughts being certainly preferable in ſuch caſes to the ſoap, ſquill, and garlic pills, commonly preſcribed in ſcurvies without a fever.

(*c*) The medicine recommended, is truly an excellent reſtorative; proper for prevention of the ſcurvy in ſuch as are recovering from other diſeaſes, and to confirm the ſtrength of ſcorbutic perſons when in the convaleſcent ſtate. But I muſt own a like medicine did not agree with thoſe who were in neither of theſe ſituations to whom I gave it. Bitters of the terebinthinated kind, though dry and kept; alſo all freſh and ſucculent plants and fruits of this quality, are nevertheleſs moſt efficacious antiſcorbutics.

(*d*) The caſe is curious and ſingular.

outlet.

outlet. They, however, are to be moderated: The tone of the inteſtines muſt be ſtrengthened: mean while, the peccant humour is gently evacuated by ſmall doſes of rhubarb, occaſionally repeated; to which a little *theriac.* or *diaſcord.* is always to be joined, with a view to keep up perſpiration; an important point. For this purpoſe, *decoctum fracaſtor.* or boluſes of *diaſcord.* with other warm diaphoretic and ſtrengthening medicines, are principally to be given; and *opium* more freely, in extreme caſes. Mean while, the patient is ſupported with ſtrong rough red wine, diluted, and a glutinous ſubaſtringent diet. I have ſometimes given four or five grains of crude alum in a *diaſcord.* bolus, where the blood was evacuated in great quantity; and when it paſſed the ſtomach without ruffling, it generally did ſervice. In this laſt caſe, *tinct. roſar.* well acidulated, and other ſtyptics, are neceſſary.

I know no peculiar treatment proper in the ſcorbutic dyſentery, different from what has been recommended by authors on that diſeaſe, farther than that the uſe of greens, and eſpecially of the auſtere and acid fruits, is to be permitted. I am informed by Mr *Chriſtie*, formerly ſurgeon to the naval hoſpital at *Port-Mahon*, that, after trial of many medicines, he found an infuſion of *ipecacuan.* in brandy, given in ſmall quantities, often repeated, the moſt effectual remedy to remove it. Rhubarb-purges, ſtomachic bark-bitters,

elixir vitriol. or the uſe of ſome light ſteel mineral water, will ſerve to perfect a recovery here; as in all other ſcorbutic caſes, where the patient has been much exhauſted by colliquative evacuations and hæmorrhages, uſual in this diſeaſe.

For ſcorbutic pectoral diſorders, bliſtering and iſſues are proper at land; as alſo riding on horſeback in the country-air; an entire milk and vegetable diet; keeping the breaſt open by expectorants. Such are *oxym. ſcillit. gum. ammoniac.* and *balſ. copaiv.*

When the ſcorbutic taint has been entirely ſubdued, it ſometimes leaves behind it other diſorders; which require the ſame treatment as is proper for them when proceeding from other cauſes; together with a mixture of antiſcorbutic medicines for farther ſecurity.

Beſides the conſumptive diſpoſition now mentioned, a dropſical habit is now and then contracted; or, what is more frequent, the legs remain ſwelled, œdematous, and ulcerated. In this laſt caſe, if the ulcers have been of long ſtanding, ſufficient proviſion being made for healing them up, by purging, and iſſues near the part, an electary of the prepared crude antimony may be given, with the addition of æthiops mineral *(k)*; and at the ſame time an antiſcorbutic diet-drink uſed:

(k) Murray.—In ſome lax habits in warm climates I have known a doſe of *Spaniſh* ſoap bring on a ſalivation. With regard to ſcorbutic habits, I have obſerved in them a copious ſalivation induced by well prepared æthiops mineral, and have found a large doſe of *ſal diureticus* remove it ſpeedily.

or,

or, provided they are obſtinate, and the gums ſufficiently hardened, the patient may undergo a ſlow and gentle courſe of mercury. In ſcorbutic habits, I generally kill the mercury with a ſmall quantity of *balſ. ſulph. tereb.* and find it ſucceed well, where the intention is not to raiſe a copious ſalivation. A bottle of decoction of the woods muſt be drunk every day at the ſame time. This, by promoting a diaphoreſis, will aſſiſt the operation of the mercury, and determine the diſſolved humours more particularly to the cutaneous ſecretion. After this courſe, a few grains of *ſulph. aur. antim.* will perhaps be neceſſary evening and morning, or Dr. *Plummer*'s medicine *(l)*, and the continuance of the decoction of woods; which in all probability will complete the cure.

Thoſe that are troubled, after having been afflicted in the ſcurvy, with numbneſs and pain in their joints, or chronic rheumatic pains, muſt practiſe riding, ſwallow a ſpoonful of unbeat muſtard-ſeed once or twice a-day, or undergo the mercurial courſe as above directed, and be well ſweated.

It may be now proper to obſerve, in the *third* place, what other remedies have been recommended for this diſeaſe, and are reputed in different countries. I elſewhere *(m)* took notice of the *pinus antiſcorbutica*, the ſpruce ſhrub, and their virtues. The learned *Boer-*

(l) Vid. Medical Eſſays, vol. 1.
(m) Page 177.

haave is ſaid to have preſcribed, for the moſt part, new churned milk. *Cort. winteran.* firſt came into repute, from the good effects it was ſuppoſed to have had in Captain *Winter*'s crew, belonging to Sir *Francis Drake*'s ſquadron.

There is a remarkable obſervation given us by *Bernard Below (n)*, of the great virtue of *herba vermicularis*, wall-pepper, in this diſeaſe. He boiled eight handfuls of the herb in eight pints of old ale, to half the quantity, in a cloſe veſſel. Of this a warm draught, *viz.* three or four ounces, was taken every morning, or every other morning, on an empty ſtomach, as the patient bore it: which had the happy effect to cure almoſt all the ſoldiers of the army afflicted in this diſeaſe; excepting a few, who, by the ſeverity of the preceding winter, were reduced into a condition paſt recovery. He remarked, that thoſe who were vomited eaſily and moſt plentifully by the medicine, ſooneſt recovered. He made uſe of this decoction, with the addition of alum and *mel roſat.* by way of gargle for the gums, which were in all affected and putrid; and by this ſimple remedy cured above fifty, who had the tendons in the ham contracted, applying the boiled herb warm to the part. He bathed their ulcers with the ſame decoction, and applied the warm herb to them in like manner.

(n) *Miſcell. curioſ. medico phyſic. academ. natur. curioſ. ann.* 6. *et* 7. *obſ.* 22.

There

There is an inſtance given by *Etmuller (o)*, of the ſoldiers in a beſieged garriſon greatly over-run with this diſeaſe, who were all perfectly cured by *ruta muraria*, white maiden hair.

Chelidonium minus, pilewort, or little celandine, for its ſuppoſed great virtues, has by the *Germans* been called *ſchorboct rout*. But the *Danes (p)* eſteem moſt *trifolium paluſtre*, marſh trefoil; which they adminiſter ſometimes by itſelf, at other times with the addition of ſcurvy-graſs.

In *Holland* the turf-diggers, who are greatly ſubject to the ſcurvy, and from thence afflicted with foul ulcers and ſwellings in the feet, uſe as their conſtant medicine *eupatorium cannabinum hemp agrimony (q)*.

We are informed *(r)*, that the *Swedes*, ever ſince the ſurpriſing recovery of their troops, when afflicted with this malady, by the uſe of a decoction of fir-tops, eſteem it altogether ſpecific in the ſcurvy. The efficacy of which is farther confirmed by the experience of the people in *Siberia*, where both the remedy and diſtemper are very frequent, according to

(o) *Schroderi dilucidati phytologia.*

(p) *Vid. Act. Haff. vol.* 3. *obſ.* 75. *Etmul. Schrod. dilucid. phytol. p.* 104. *Simon. Pauli digreſſ. de vera cauſa febrium ſcorbuti*, &c.

(q) Vid. New Diſpenſatory, or improvement of *Quincy* on the article *eupatorium cannabinum.*

(r) *Vid. Moellenbroek, p.* 116. *Etmul. Schroderi dilucidati phytolog. p.* 2. See the account of it, chap. 4.

the late relation of a learned and accurate traveller *(s)*.

In *Groenland*, where this diſeaſe is extremely frequent, we are told by a gentleman *(t)* who twice viſited the country, that the natives make uſe of ſcurvy-graſs *(u)* and ſorrel toge-

(s) Tenellas pini ſummitates vulgus Sibiriæ pro infallibili antiſcorbutico remedio habet. Gmelin Flor. Sibiric. p. 178.

(t) Hermannus Nicolai. Vid. Act. Haffn. vol. 1. obſ. 9.

(u) Extract of a letter.

The ſhips who are annually employed in the whale-fiſhery, are of all others the beſt fitted out, both as to the variety and quality of their food; the voyage is ſhort, and the ſeamen kept much in action: ſo that bad water and decayed proviſions can ſcarcely fall to their ſhare. Yet it is notoriouſly known, that there is no part in the world where ſhips crews are ſo liable to the ſcurvy, as in the polar circle. Thoſe who are ſeized on their firſt entrance into the cold, find an increaſe of their ſymptoms when got into the ice. The attack of the malady is here more ſudden, and its progreſs more rapid, than any where elſe. The patient has ſeldom any cure or alleviation till the weather ſoftens: for the month of *July* is very moderate, which is almoſt the only pauſe of winter; and at this time the ſcurvy-graſs ſteps in, and performs incredible wonders. I have been an eye witneſs to many ſcorbutics who have recovered in a few days, from what one would judge an irrecoverable ſtate, by a plentiful uſe of this *Greenland* ſalad. It is much coveted by the ſound as well as ſick. Our field and garden ſcurvy-graſs are bitter and pungent; this is mild and eſculent, reſembling our ſea ſcurvy-graſs, or *cochlearia minima ex montibus Walliæ*. It is ſaid to acquire a pungency, if tranſplanted into warmer countries; but this circumſtance I much doubt. However, be that as it will, its efficacy in the ſcurvy is there an undoubted and daily experienced truth; and it may be juſtly deemed one of the moſt powerful antiſcorbutics in the world. Vegetable food prevails over the ſea-ſcurvy in all parts; but this reinſtates in as many hours, as any other courſe requires days. I cannot diſmiſs theſe reflections, without obſerving how kind and provident Nature has been in the plentiful ſupply of this ſovereign plant every where in that country. *Ubi morbus ibi remedium*, is an obſervation of antiquity; and no where more juſtly verified than in the preſent caſe.

ther;

ther; and that theſe two herbs, put with barley or oats in broths made of fowls, or the fleſh of rein-deer, have an effect to recover the diſeaſed moſt ſurpriſingly in a ſhort time, even after having loſt the uſe of their limbs.

The *Norway* cure affords the only one well-atteſted inſtance, of this diſtemper being ſucceſsfully removed by what would ſeem ſo different from the nature of vegetables, as a foſſil or earth. It is related by authors of undoubted credit *(w)*, particularly by *Petræus (x)*; and ſeems to have been known before *Eugalenus* had confounded moſt other diſeaſes with the true ſcurvy; as it is taken notice of in the year 1624 by *Sennertus*, when *Eugalenus*'s writings, in all probability, might not have reached *Norway*. It is a reddiſh or blackiſh earth, dug up nigh *Bergen*; of which, from half a dram to a dram is the doſe; and operating by ſweat, it is ſaid to cure the patient in a ſhort time.

I mentioned two very bad ſcorbutic caſes which lately occured in *Fife (y)*. The ſurgeon, upon ſeeing the patients, inquired what had been their ordinary food, and whether they commonly eat any green herbs or vegetables? One of them, a fiſherman, replied, That he lived upon bread, dried and ſalted fiſh, which was all he could afford; and

(w) Vid. Wormii muſæum; *Bartholini epiſt. cent.* 1. *n.* 89.
(x) Vid. Diſſert. harmonic.
(y) Vid. Chap. 2. p. 127, 128.

ſometimes ſalt beef, of which laſt he was very fond. The ſurgeon deſired them to abſtain from their former diet; in place of which, they were to make two good meals a-day of a vegetable ſoop, prepared of coleworts and other green garden-ſtuff; and to eat water-creſſes by way of ſalad. He beſides preſcribed a fomentation for their legs, and gave them a doſe or two of very gentle phyſic. By which means they both recovered; and one of them, ſoon after, overjoyed upon being reſtored to the uſe of his limbs, walked ſeveral miles to return the gentleman thanks for his ſalutary advice.

I ſhall now conclude what I have to ſay on this head, with the following cautions and obſervations.

1*ſt*, As to evacuations: It is to be obſerved, that this diſeaſe, eſpecially when advanced, by no means bears bleeding; even although the moſt acute pains upon the membranes, a high degree of fever, and dangerous hæmorrhages, would ſeem to indicate it. The patient generally dies ſoon after the operation. Nor does it bear ſtrong cathartics, which are often injudiciouſly adminiſtered in its commencement; many of which only farther promote the colliquation and acrimony of the blood and humours. The belly muſt at all times be kept open, but chiefly by ſuch laxative food, when green vegetables cannot be obtained, as may anſwer their purpoſe, *viz.* barley and currants, ſtewed prunes, *&c.*; or with

with a decoction of tamarinds and *cremor tartar*, a morſel of lenitive electary, ſea-water, and the like. From bliſters there is danger of a gangrene. As to vomits, though I never have had any great experience of their effects; yet, by the obſervation of others, ſquill-vomits have been found ſerviceable.

2*dly*, Perſons in the advanced ſtages of this diſeaſe, are not, without great caution and prudence, to be expoſed to a ſudden change of air; or brought up from lying a-bed below in the hold of a ſhip, to the freſh air, in order to their being landed. On this occaſion, though ſeemingly pretty hearty, they are to be given a glaſs of generous wine, well acidulated with lemon or orange juice; which is likewiſe the beſt cordial in their fainting-fits. When they drop down ſeemingly dead, it were to be wiſhed, that ſome methods were tried for their recovery; as putting them into a warm bed; uſing of ſtrong ſtimulants, and frictions; blowing into the lungs, *anus*, *&c.* An uncommon degree of ſloth and lazineſs which conſtantly accompanies this evil, is often miſtaken for the willful effect of the patient's natural diſpoſition. This has proved fatal to many, ſome of whom, when obliged by their officers to climb up the ſhrouds, have been ſeen to expire, and fall down from the top of the maſt.

3*dly*, After a long abſtinence from greens and fruits, ſcorbutic perſons ſhould be treated like

like one almoſt ſtarved to death; that is, not permitted for a few days to eat voraciouſly, or ſurfeit themſelves with them; otherwiſe they are apt to fall into a dyſentery, which often proves mortal.

Laſtly, There are but few medicines carried out in a ſea-cheſt, which are here of ſervice. Thoſe of the foſſil or mineral kind, ſuch as ſteel, antimony, and eſpecially mercury, do manifeſt harm. Opiates occaſion an unaccountable lowneſs and dejection of ſpirits, with an oppreſſion on the breaſt. When they are abſolutely neceſſary, as in fluxes, they muſt be given always of the warmeſt kind; and agree beſt, when, before or during their operation, a ſtool is procured: after which the patient is to be refreſhed with wine. Where the breaſt was much affected, I always gave them in a draught of ſquill-mixture; or, in caſe the ſtools were not very frequent, I added a few grains of vitriolated tartar to the opiate bolus, in order to procure a diſcharge that way.

After trial of many medicines in the ſea-invoice, there are but two I can principally recommend.

The firſt is the *cort. peruv.* infuſed in wine. I gave at the ſame time a decoction of *lign. guajac.* (of which there is great plenty in ſhips) with the addition of *rad. glycyrrh.* which prevented the heartburn that the decoction otherwiſe occaſioned. The bark did not always agree with the ſtomach; but where

where it did, I obſerved a more favourable appearance upon the gums and ulcers, by its checking the putrefaction: and in two inſtances where a gangrenous diſpoſition was induced by too tight a roller, the ſuppuration next day was more laudable. It was of uſe in ſalivations and hæmorrhages, but rather hurtful in fluxes. Warm draughts of the decoction gave always relief, if the patient ſweated; in which caſe the bark alſo agreed better.

But another, and more excellent medicine, is the *oxym. ſcill.* from which I have experienced extreme good effects. It generally kept the belly open, and promoted the ſecretion of urine; by both evacuations diſcharging the acrimonious humours. It gave relief in many of their complaints, particularly thoſe of the breaſt, which ſcorbutic people are ſeldom free from. I had formerly gathered a great quantity of this root when at *Minorca*; and having made the *oxym. ſcillit.* gave it to moſt of our patients in the year 1747, at the rate of one ounce, or an ounce and a half, in the ſpace of twenty-four hours, with remarkable eaſe of their complaints *(a)*.

(a) The eminent antiſcorbutic virtue of the ſquill or ſea-onion, at the ſame time that it confutes the groundleſs opinion of the ill effects of acrid medicines in the moſt putrid ſcurvies, in ſome meaſure confirms the efficacy of what has been recommended in the foregoing chapter, and has been ſo often experienced beneficial for prevention, *viz.* common onions, and even garlic, as in ſome reſpects they are all of ſimilar virtues.

Con-

Concluſion of Dr. GRAINGER's *letter* (*ſee p.* 127.) *giving an account of ſcurvies at* Fort-William.

——Warned by my former miſtake, I never uſed the lancet, unleſs the patient was uncommonly plethoric; and then too a very ſmall quantity of blood anſwered the purpoſe. I have ſeen fellows who have often borne the loſs of twenty ounces, faint when only ſix were drawn from them at this time. Upon ſtanding, it did not ſeparate, but appeared like the blood in malignant fevers, altogether diſſolved, and of a livid colour. Some of the ſymptoms, vomits of *ipecacuan.* rather increaſed, *viz.* pains, faintiſhneſs, *dyſpnœa*, bleeding of the gums, *&c.* they abated none of them. Indeed it was lucky that the ſtomach ſeldom required their adminiſtration.

Purgatives, however, were found highly beneficial, though repeated every third day. They not only removed the troubleſome ſymptoms ariſing from coſtiveneſs; but their operation, though ſometimes pretty briſk, I never obſerved to impair the patient's ſtrength, and always remarkably to abate their excruciating tortures. Although I gave at firſt an infuſion of jalap; yet, obſerving bloody ſtools to have enſued on its uſe, I afterwards exchanged it for a ptiſan of *ſenna*, with *cremor tartar.*; which ſeemed to anſwer better. One man drank ſalt water every other day, and

and found it a ſerviceable purge. Would it cure the ſcurvy?

But theſe, though uſeful, were not able alone to cope with the diſtemper. An attentive conſideration of its ſymptoms ſeemed to ſhew it was putrid. On this I founded my practice; and had ſoon the pleaſure to find, that ſucceſs confirmed my conjecture.

The antiſeptics I chiefly uſed, were, *el. vitriol.* to the quantity of half a dram twice a-day, in water; or *ſp. nitr. dul.* in a ſmaller doſe. A gentle *mador* was alſo ſolicited by a bolus of camphire and nitre, of each half a ſcruple, given every night. For this purpoſe too they were allowed to drink plentifully of warm ſage tea; which, with the aſſiſtance ſometimes of a glaſs of mulled claret, ſeldom defeated our intentions. If they did not ſweat, an increaſe of very fœtid urine ſupplied happily that diſcharge. Greens were proper: but as they could not be had, broths made of young fleſh, kid, *&c.* with barley, were indulged them; whilſt camomile drunk like tea, afforded a truly medical breakfaſt. The good effect of this management was ſoon viſible in all.

Ulcers of the gums, *&c.* not only required the continuance of the preſcribed meaſures, but the bark, and detergent gargariſms, were found indiſpenſable auxiliaries. I have applied bliſters to the pained members. The practice did not anſwer. They brought on a gangrenous diſpoſition in one man; which

bark,

bark, and the ſtrongeſt antiſeptics, with difficulty put a ſtop to; and in all rather increaſed their torments. The following epithems were found highly anodyne. ℞. *ſp. è hordeo elicit. (vulgo* whiſky) *acet. acerr. ana lib.* i *ſp. tereb. lib.* ſs. *ſal. tart. unc.* ſs. *M.* The milder was, whiſky and vinegar *p. æ.* camphire and ſoap *q. ſ.* With one or other of theſe the diſcoloured and pained places were chafed.

Their gums at the ſame time were not neglected. The pain of them made the men extremely importunate for relief. Of all the applications at that time uſed, I found the greateſt ſervice from tobacco-juice and *tinct. myrrh. et aloës*, rubbed on them ſeveral times a-day. Alum-water, and oak-bark decoction reſtored their uſual firmneſs.

In two weeks time, ſometimes ſooner, the ſymptoms began to abate, the *maculæ* turned brown, and in four weeks they complained only of weakneſs. This, bathing in the ſea, and aromatic bitters with ſteel, ſoon removed. I had the good fortune not to loſe a ſingle man.

CHAP. VI.

The theory of the diſeaſe.

IN order to underſtand the true ſtate and condition of the body under this diſeaſe, ſome things muſt neceſſarily be premiſed from the known and eſtabliſhed laws of the animal œconomy.

An animal body is compoſed of ſolid and fluid parts; and theſe conſiſt of ſuch various and heterogeneous principles, as render it, of all ſubſtances, the moſt liable to corruption and putrefaction. Such indeed is the ſtate and condition of every living animal, as to be threatened with this, from the mechaniſm of its own frame, and the neceſſary laws of circulation by which it ſubſiſts. For by the uninterrupted circulation of its fluids, their violent attrition, and mutual actions on each other, and on their containing veſſels, the whole maſs of humours is apt to degenerate from its ſweet, mild, and healthful condition, into various degrees of acrimony and corruption. Parts of the ſolids themſelves, continually abraded by the repeated force of the circulating fluids, are again returned into their channels. Hence the neceſſity of throwing out of the body, by different outlets, theſe acrimonious and putreſcent juices, rendered thus unfit for the animal uſes and functions, together with the abraded particles of the ſolids. And a daily ſupply of food, or freſh nouriſhment, is required to recruit this conſtant waſte, both of the ſolid and fluid parts. Thus the bodies of all animals are in a conſtant ſtate of change and renovation, by which they are preſerved from death and putrefaction.

There are two evacuations chiefly by which the blood is freed from theſe putreſcent noxious humours, *viz*, urine, and inſenſible perſpiration.

ſpiration. Not but that there are many other ſecretions neceſſary to health: yet they are rather more properly adapted to other ſingular and peculiar uſes; except that of ſtool, which in ſome caſes may be ſubſtituted as a vent to theſe corrupted humours, upon the defect of either of the other two.

The moſt conſiderable of all the evacuations, is that by inſenſible perſpiration; which *Sanctorius* found in *Italy* to be equal to five eighths of the meat and drink taken into the body. Moſt of the obſervations made by that author will be found true; as they have been confirmed by repeated experiments, by Dr. *Keil* in *England*, the learned *Degorter* in *Holland*, and others *(b)*; making a proper allowance for the different climates they lived in, their different ages, ways of life, and conſtitutions. Upon which ſubject, I ſhall here obſerve, that, conſidering how often animals, as well as plants, as appears by many experiments, are in an abſorbing and bibulous condition, the exact quantity perſpired cannot at all times be juſtly determined, without knowing the quantity imbibed. Upon this conſideration, however, it will appear, that in many caſes it often exceeds the quantity aſſigned by *Sanctorius*. It is indeed, beyond doubt, the moſt copious evacuation of the whole body: and though it is ſometimes in greater or leſſer quantities, as influenced by various

(b) Dr. *Lining* in *South-Carolina*, Mr. *Rye* in *Ireland*, and Dr. *Robinſon*.

cauſes;

cauſes; yet it can never be partially ſuppreſſed long, much leſs can it be entirely obſtructed, without the greateſt detriment to health. For ſhould its defect for a ſhort time be ſupplied by ſome more copious and increaſed evacuation, as it ſometimes is by that of urine or ſtool; yet towards perfect health, the integrity of all the animal functions, more eſpecially the natural evacuations, are requiſite: there being ſomewhat thrown out of the body by each, which cannot ſo conveniently paſs another way; as *Sanctorius* rightly obſerves, of any other evacuation ſubſtituted for this, "It diminiſhes the quantity, but leaves be-"hind it the ill quality". *(c)*.

It may be proper farther to remark, that this being the laſt and moſt elaborate action of animal digeſtion, the body is hereby freed from what is conſequently the moſt ſubtile and putreſcent of the animal humours. And it is certain theſe excrementitious humours naturally deſtined for this evacuation, when retained long in the body, are capable of acquiring the moſt poiſonous and noxious qualities, and a very high degree of putrefaction *(d)*; becoming extremely acrid and corroſive: and do then give riſe to various diſeaſes, according to the habit or conſtitution of the perſon, *viz.* the ſtate of the ſolids and

(c) Aph. 19.
(d) Vide Hoffman. de venenis corporis humani. Sanctor. aph. 43.

fluids at that time, or the influence and determination of other cauſes.

Moreover, not only due and conſtant evacuations of what may be rendered thus ſo extremely pernicious to the body, are requiſite towards the health and life of animals; but a freſh and daily ſupply of a ſoft and mild liquor, ſuch as the chyle, is farther neceſſary to correct and prevent the conſtant natural putreſcent tendency of the humours, and to ſweeten and dilute the acrimony which they daily and hourly contract from the action of the body, and by life itſelf. It appears, that animals ſtarved to death, do not periſh from want of blood, or an inſufficient quantity of other juices, but from the corrupt and putrid ſtate of them.

It would be foreign to my purpoſe, to obſerve what various degrees and kinds of putrefaction may be induced in the human body by other means (*viz.* by putrid ferments, or putrid ſubſtances of any kind, contagious poiſons, and acrimony of different ſorts, either taken inwardly, or outwardly applied); as the ſcorbutic putrefaction, it will appear, is purely the natural effect of animal heat and motion cauſed by the action of the body. How long life may be preſerved during this putrefaction of the animal, or what degree of corruption in the humours may ſubſiſt during life, it is not eaſy to determine; though, beyond all doubt, ſuch an alcaleſcent ſtate or acrimony in the blood as is deſcribed by ſome authors,

is

is not conſiſtent with life. Alcaline and putrid ſubſtances are very different.

This being premiſed, I come now to obſerve the effects upon the human body of the ſeveral cauſes which are remarked to give riſe to the ſcurvy. *Firſt*, An intenſe degree of cold, ſuch as we have ſometimes during ſevere winters in our own country, but eſpecially ſuch as the crews felt who wintered at *Spitzbergen* and *Greenland*, and is common in the winters in *Groenland* and *Iceland*, is experienced to be among the prediſpoſing cauſes to this diſeaſe.

The obvious effect of cold on the human body is, to conſtringe the whole external habit to dry and corrugate the ſkin; and all ſtatical experiments prove, that cold obſtructs or diminiſhes inſenſible perſpiration. *Degorter* obſerved, that, *cæteris paribus*, the perſpiration was always leſs, the greater degree of cold there appeared to be from the thermometer *(e)*. *Sanctorius*, who lived in a country where the winters are ſeldom long and ſevere, gives us a very juſt aphoriſm *(f)*, if rightly underſtood, on this ſubject. It is, That, during a cold conſtitution of air, the robuſt (or ſuch as have ſtrong elaſtic fibres, and a denſe blood, by which a great degree of heat overcoming the force of the external cold, is ſoon generated in them, eſpecially by

(e) Tract. de perſpir. cap. 12. § 24.

(f) Frigus externum prohibet perſpirationem in debili, in robuſto vero auget, aph. 68.

muſcular motion or exerciſe) may be made to perſpire much more than at other times. But in weak perſons, or thoſe that uſe no exerciſe, and univerſally in all who cannot bring themſelves into a degree of heat exceeding that of the atmoſphere, perſpiration will be leſſened, according to the different degrees of cold to which their body is expoſed; and which, when very intenſe, entirely ſtops this neceſſary evacuation. Hence ſuch as uſe exerciſe, and keep warm, during cold winters, are not ſo ſubject to ſcorbutic complaints, as thoſe who are weak, and uſe none.

But it muſt be remarked, that cold joined with drineſs and purity in the air, by keeping up a due degree of tenſion in the ſolids, is not naturally productive of this diſeaſe. It may indeed be ſuppoſed, that when the cold becomes very intenſe, as in the winter in *Greenland*, the vital or animal heat of the body may be ſo overcome by it, that the digeſtive faculties (as in a perſon ſtarving with cold) are chilled and enervated; and the ſolids being overbraced by ſo high a degree of cold, may at laſt loſe their tone of elaſticity. In this caſe, the conſtitution becoming gradually habituated to an over-charge of what phyſicians call the *ſeroſa colluvies*, by a long obſtructed perſpiration; inſtead of coughs, ſtitches, pleuriſies, and the like diſorders of the inflammatory kind, uſual in ſuch ſeaſons from too tenſe fibres, the ſcorbutic *diatheſis* may more naturally be contracted, eſpecially if ſuch food only

only is uſed as muſt contribute to form the diſeaſe. But this, though probable, cannot be aſcertained from fact; becauſe, as I obſerved elſewhere, theſe northern countries, above all others, are continually peſtered with fogs, even during their ſevereſt froſts. And by all faithful and accurate obſervations made on this diſeaſe, moiſture is experienced to be the principal and main prediſpoſing cauſe of it. This indeed of itſelf is ſufficient to diſpoſe the conſtitution to the ſcurvy in any climate, even the warmeſt. It is obſervable, that, in warm climates, the crews of ſhips at ſea are liable to this malady, when the hot weather, by which the fibres of the body are much relaxed, is ſucceeded by great and inceſſant rains uſual in theſe latitudes, or when the ſeaſon proves very unconſtant. The diſeaſe is there likewiſe much owing to the great length of theſe ſouthern voyages. But, otherwiſe, it is not near ſo frequent a calamity as in colder climates; the bad effects of moiſture being rendered much more pernicious when combined with cold. A cold and *moiſt* conſtitution of the atmoſphere, together with wet lodgings, damp beds, cloaths, and other inconveniencies which poor people neceſſarily ſuffer at ſuch ſeaſons, is the moſt frequent and ſtrongeſt diſpoſing cauſe to it. And, upon the whole, it is to be remarked, that whatever ſhuts up the pores of the ſkin, and impedes or leſſens perſpiration, which moi-

ſture and dampneſs effectually does, and that more ſtrongly with the addition of cold, is chiefly productive of this diſeaſe.

Sanctorius, in ſeveral places, deſcribes ſuch a ſcorbutic conſtitution of air, and its effects, as is often met with at ſea; "Too cold, "windy, or wet air, leſſens perſpiration" *(h)*. He had before enumerated almoſt all the cauſes which obſtruct this evacuation, and occaſion the diſeaſe, *viz.* "*aër frigidus, cæ-*"*noſus, et humidus, natatio in frigida*, groſs "viſcid food, and a neglect of exerciſe" *(i)*; and obſerves the conſequence of perſpiration being obſtructed by ſuch a moiſt groſs air: "It converts the matter of tranſpiration into "an *ichor*; which being retained, induces a "cachexy" *(k)*. He very juſtly afterwards paints out the ſcorbutic cachexy, when deſcribing the effects of humidity, or of ſuch an indiſpoſition of air as produces the ſcurvy: "Here perſpiration is ſtopt, the paſſages of "it clogged, the fibres are relaxed; and the "tranſpiration retained, proves hurtful, and "induces a ſenſible weight in the body" *(l)*.

This he found by ſtatical experiments to be the fact. But, for the better underſtanding of theſe excellent aphoriſms, it may be proper to obſerve, that, upon the ſtate of the atmoſphere, the ſtrength and weakneſs of the fibres of our body in a great meaſure depend. Too moiſt an air not only ſtops up the pores

(h) Aph. 200. *(i)* Aph. 67.
(k) Aph. 146. *(l)* Aph. 148.

of

of the ſkin, but weakens and relaxes the whole ſyſtem of ſolids. Hence, during a rainy cloudy ſeaſon, all the members of the body feel heavy, the appetite is diminiſhed, the pulſe of the heart and arteries is more feeble, and every one is ſenſible of a languor of ſtrength, and a lowneſs of ſpirits. Farther, moiſture, by weakening the ſpring and elaſticity of the air, renders it unfit for the many ſalutary purpoſes obtained by reſpiration. Such an air is not able to overcome ſufficiently the contractile force of the pulmonary fibres reſiſting the dilatation of the lungs. From the impaired action alſo of this *viſcus*, the laſt and moſt important office of animal digeſtion upon the chyle, that of *ſanguification*, is not duly performed. As we always find, that thoſe who have their lungs faulty, can never be properly nouriſhed; ſo indeed there can be no good digeſtion without pure air. This is neceſſary; as it mixes with the aliment in the mouth, has free acceſs to the ſtomach, and through the whole inteſtinal tube, where it is a very active cauſe of digeſtion; but chiefly as it aſſiſts the lungs in performing that function of aſſimilating and converting the crude chyle into blood. Hence, during a moiſt conſtitution of the air, improper food, or ſuch as affords a too viſcous and tenacious chyle, can never rightly be converted into this vital juice, for the ſupport and nouriſhment of the body.

But, further, perſons in ſuch ſituations where they are continually expoſed to moiſt air, in damp lodgings, in wet cloaths, beddings, &c. are found to abſorb great quantities of the ſurrounding moiſture *(m)*. And theſe obſtructed and imbibed humours becoming more and more acrid, this ſerous *colluvies*, in length of time, turns putrid in the human body *(n)*. All animal ſubſtances have naturally a tendency to corruption in too moiſt an air.

I come next to obſerve the other concurring cauſes which have ſo great an influence in diſpoſing to this diſeaſe; ſuch as lazineſs

(m) Dr. *Keil (Med. Stat. Brit.)* ſeems to have been of opinion, that the diſorders ſaid commonly to depend on retained perſpirable matter, were owing to noxious particles abſorbed. It muſt be owned there is ſome difficulty in this matter: for though the balance ſhews the quantity of perſpiration to be equal to five eighths (or whatever elſe different authors have aſſigned it) of the *ingeſta* more than what is abſorbed; yet the quantity perſpired may greatly exceed this, ſince the quantity abſorbed is unknown. Moiſt air loaded with more heterogenous particles than dry air, may often produce bad effects, as much, or perhaps more, by abſorption of theſe particles, than by ſtopping perſpiration. But it is ſufficient to our purpoſe, to take it for granted, that moiſt air obſtructs perſpiration, which is univerſally acknowledged. And we have no occaſion to inveſtigate the peculiar quality of the heterogeneous particles abſorbed; becauſe it appears (ſee part 2. chap. 1.) that the principal matter retained, as alſo what is abſorbed from moiſt or unwholſome air, is, though a general, only a remote cauſe of the ſcurvy; and not what may be called the *cauſa proxima*, as the laſt may in other epidemical and contagious diſeaſes. Any perſon will be convinced of this who conſults the beſt authors on that ſubject, *viz. Hoffman. de venenis in aëre contentis epidemicorum morborum cauſis. Lanciſius de noxiis paludum effluviis. Ramazzini conſtitutiones epidemicæ.*

(n) Vid. Sanctor. aph. 43.

and

and indolence of diſpoſition, and from thence a neglect of uſing proper exerciſe, or a ſedentary and inactive life.

Every one, from experience, muſt be ſenſible how much exerciſe contributes to the health of the body, at well as to chearfulneſs of mind. It is neceſſary to keep up that due degree of firmneſs and tenſion in the ſolids, upon which the ſtrength and ſoundneſs of a conſtitution depend: and which is acquired by ſuch motions as increaſe the mutual action of the veſſels on their contents, and each other. But the whole proceſs of animal digeſtion, as well as all the ſecretions, depend upon this ſtrength and firmneſs of the veſſels and *viſcera*. Whenever the tone of theſe is relaxed and weakened, which is moſt effectually done by keeping the body long at reſt, or by neglect of due exerciſe, there muſt follow a deficiency in the vigour and ſtrength of the powers of digeſtion; ſo that they will not be ſufficient to concoct and elaborate the aliment, eſpecially if it is of a too crude and viſcid nature. And the whole ſyſtem of ſolids being thus relaxed, by reaſon of a deficiency of their action and efficacy, the chyle cannot be properly aſſimilated, nor the heterogeneous maſs of fluids intimately mixed and blended; ſo that the body here is not duly nouriſhed, nor the ſecretions rightly performed; eſpecially that of perſpiration, which exerciſe powerfully promotes. Hence the ſcorbutic

diatheſis,

diatheſis, want of proper digeſtion, weak and relaxed fibres; with a ſtoppage of perſpiration.

The ſame ſtate of things will likewiſe occur in thoſe who have been much weakened by a preceding fit of ſickneſs; with this additional cauſe, that, beſides the weakened tone of the ſolids, and of all the powers of digeſtion, there is often left in the conſtitution after fevers, an acrimonious ſtate of the juices. Here ſuch a diet is neceſſary to prevent the ſcurvy, as is adapted to the weakneſs of the organs, as requires the gentleſt action of the *viſcera* to concoct and aſſimilate it, and the ſmalleſt force to forward it in its paſſage, and is of a quality proper to correct the acrimonious diſpoſition of the humours.

Theſe being the prediſpoſing cauſes of this diſeaſe, it plainly appears, that the effects produced by them, are, a relaxation of the tone of the animal fibres, a weakening of the powers of digeſtion, together with a ſtoppage of perſpiration. This laſt particular may receive confirmation, by obſerving, that ſome of the paſſions of the mind, as fear and ſorrow, which have been aſſigned as cauſes of the ſcurvy, and are almoſt conſtantly its effects, act with the ſame remarkable influence on perſpiration, as they were found to have on this diſeaſe in Lord *Anſon*'s crew *(o)*. But as the mechanical effects of theſe paſſions upon the human body would require too long

(o) Compare *Sanct. aph.* 456 458. 460. 461. 462. 463. 469. 474. 478. with Lord *Anſon*'s voyage, p. 101. edit. 5.

a diſ-

a diſcuſſion from this place, I ſhall refer it to the authors who have expreſsly treated of them *(p)*.

I proceed to obſerve what farther effects are produced by what has been aſſigned as the occaſional cauſe of this diſeaſe, *viz.* a groſs and viſcid diet in ſuch circumſtances as have been deſcribed, and the want of freſh greens or vegetables, which are found ſo effectually to check the ſcorbutic virulence.

I imagine it would be unneceſſary to inſiſt long in ſhewing how, in the unavoidable hardſhips that ſometimes attend ſeamen in long voyages, or the beſieged ſhut up in towns; as likewiſe in times of ſcarcity or famine, or when people at any time uſe putrid fleſh or fiſh, mouldy bread, or unwholſome waters; how, I ſay, from ſuch corrupted ſubſtances, the ſcorbutic taint might probably be induced in the body. The aliment is never ſo far diveſted of its original qualities by digeſtion, as not to carry ſome of them along with it into the blood. I am indeed inclined to believe, that where the prediſpoſing cauſes already mentioned are wanting, ſuch putrid and corrupt aliment would occaſion other diſeaſes different from the ſcurvy. Though it may tend to increaſe it, and often concurs with other cauſes at ſea to render it highly virulent; yet it is certain, the ſcurvy appears moſt

(p) Vid. A medical diſſertation on the paſſions of the mind; and *Robinſon* on the food and diſcharges of human bodies, p. 77.

frequently where ſuch food has no ſhare in breeding it, however generally it has been accuſed; its moſt common occaſional cauſe being the groſs viſcid diet before deſcribed *(q)*. In order to underſtand the effects of which, it may be proper to premiſe ſome obſervations on the nature of digeſtion in general, and the different changes our aliment muſt neceſſarily undergo, in order to fit it for the various purpoſes of life.

By the firſt proceſs of digeſtion in the mouth, ſtomach, and inteſtines, the food muſt be rendered quite fluid; otherwiſe it can never paſs into the blood, through the exceeding fine, and almoſt imperceptible lacteal veſſels. For which purpoſe it is broken and divided by the teeth; farther ſubdued, macerated, and diſſolved, by the heat, moiſture, and various actions of the ſtomach, inteſtines, *viſcera*, *&c.*; diluted by watery liquors, diſſolved by others that are ſaponaceous, till, in the nature of a fluid chyle, it is received into the lacteals. What is unconquerable by theſe firſt powers of digeſtion, is thrown out of the body by ſtool. After it has in this liquid form entered the blood, it ſeems but little changed; retaining ſtill a vegetable character, and reſembling the nature of milk, in colour as well as other qualities; all animals being thus nouriſhed, as it were, with their own milk. It therefore requires a ſtill farther and more perfect elaboration, in order to ani-

(q) Part 2. chap. 1.

maliſe

maliſe it, and fit it for the important uſes of nutrition and perſpiration.

To nouriſh the fluids, is to replace a liquor of the ſame kind and quality with that which is gone. And as they are the thinneſt parts of the fluids which are continually loſt, ſo the aliment muſt be reduced extremely thin and fine to reſtore them. It muſt likewiſe be greatly attenuated, ſo as to paſs through the moſt minute canals of the body, in order to adhere to, and repair the waſted ſolids. *Laſtly*, It muſt ſtiil be more ſubtiliſed, before it can paſs off, in the form of a volatile and inſenſible ſteam, by perſpiration.

Thus the nouriſhment both of the ſolids and fluids, and the matter of inſenſible perſpiration, are all furniſhed from the aliment; that is, from the fineſt parts of the chyle, elaborated to an extreme degree of ſubtilty and perfection, and converted into the peculiar nature of the juices of our body, by the action which is called the *ſecond concoction*. What cannot, by the powers of this action, be thus duly digeſted and aſſimilated, as in the former concoction the recrements were thrown off by ſtool, muſt here paſs by urine. It requires a much ſtronger force of digeſtion, and a much longer time, to convert the chyle into nouriſhment, or into perſpirable matter, than to paſs it off crude by urine. In this way great quantities of liquor are ſoon paſſed. But for ſome time after eating, the perſpiration is always leſſened, and is very ſmall, whilſt the white

white chyle is circulating, unſubdued, in the blood *(r)*. It is certain, that many ſorts of groſs and viſcid aliment, though they may paſs the firſt concoction, are yet unconquerable by the ſubſequent powers, ſo as to furniſh proper matter either for nouriſhment or perſpiration.

From what has been ſaid, the nature of aliment proper for theſe purpoſes may be underſtood; as likewiſe how it is fitted and prepared for theſe uſes, both without and within the body. Thus, whatever method of art or cookery, by macerating, boiling, ſtewing, fermenting, *&c.* deſtroys the viſcidity and coheſion of its parts, or renders it thinner and more fluid, performs part of that digeſtion which it neceſſarily muſt undergo in the body. By theſe means, in many caſes an aliment may be furniſhed, ready prepared, of ſuitable and ſimilar qualities to the chyle or humours of our body, and which requires but a ſmall force to convert it into nouriſhment; being at once miſcible with the blood, and all the reſt of our humours. Of this nature are light thin broths, fermented bread, tender herbs and roots boiled, *&c.* Such food is moſt proper for children, valetudinarians, and thoſe who have any where a defect in their digeſtion. Hence likewiſe we may know how the concoction of aliment is promoted in the firſt paſſages, by diluting, ſaponaceous, and attenuating liquors; and by aromatic, bitter,

(r) Vid. Lower de corde, p 243.

and

and bilious medicines; and what is particularly requiſite for its farther elaboration afterwards, *viz.* muſcular motion, exerciſe of the whole body, ſtrong fibres, the action of the lungs, and a good air.

I obſerved elſewhere, and it will appear to follow from what has been ſaid, that all general rules or precepts which can be given for diet, are to be underſtood only as relative to the conſtitution or ſtate of the body at the time. In particular, the viſcidity and tenacity, or the ſolidity and hardneſs of food, in all animals, ought to be proportioned to the ſtrength of their vital powers of digeſtion. I mean by theſe, the whole collected powers or faculties of the body, by which it aſſimilates into its own animal nature, various ſorts of aliment. Such aliment as is too hard for theſe powers, can never be ſufficiently broken or diſſolved; and when its tenacity exceeds this force of digeſtion, it can never be rightly converted into nouriſhment.

I proceed to apply this doctrine, and to conſider more particularly the nature and qualities of ſuch food as is truly the occaſional cauſe of the ſcurvy, *viz.* a diet of dried or ſalt fleſh or fiſh, together with the groſſer farinaceous ſubſtances unfermented.

It is obſervable, that the tenderer or ſofter fleſh is made by keeping for ſome time without ſalt, it is found to be the eaſier of digeſtion: but by being long hardened and dried

with

with ſalt, its moſt fine, ſubtile, and nutritious parts, either fly off, or are fixed. Experience ſhews, that fleſh long ſalted is of very difficult digeſtion. It requires perfect health, together with exerciſe, plenty of diluting liquors, vinegar, and many other correctors, to ſubdue it in the firſt paſſages. And, after all, it will afford a too groſs and unconquerable chyle, where there is a defect in the organs of ſanguification, or thoſe of the ſecond concoction. The nouriſhment we receive from animal ſubſtances, or what paſſes into our blood, ſeems chiefly to be the gelatinous or lymphatic part; the fibres being indiſſolvable, even in the firſt paſſages, and from thence are paſſed by ſtool. Together with which, part of the animal oil, or the fat of the meat, likewiſe enters the lacteals. This laſt, when long kept, even ſalted, is almoſt always ranceſcent, eſpecially that of pork. And as all the nutritious particles are here intimately intangled with ſea-ſalt, this ſalt cannot, without difficulty, be extricated from them by the powers of the body. Hence ſuch groſs, ſharp, and ſaline food, is rendered improper, in many caſes, from that thin, ſoft, mild nouriſhment required; more eſpecially as is ſometimes the caſe at ſea, when there is a ſcarcity of water to dilute, and to aſſiſt the digeſtion of ſuch hard food.

The next part of diet to be conſidered, is, the farinaceous ſubſtances unfermented, *viz.* ſea biſcuit, pudding, *&c.* It is certain nothing

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can be more wholſome than the mealy ſeeds of ſeveral plants, as wheat, barley, rice, &c. as alſo ſeveral of the *legumina:* and for this reaſon, becauſe an oil ſeems neceſſary to the compoſition of the animal emulſion; and theſe in particular contain a vegetable one, of mild and friendly qualities to the human body. They afford ſo wholſome a nouriſhment, that they are uſed by the generality of mankind for the greateſt part of their food. But ſome of theſe ſubſtances, in particular wheat-flour, (which is moſt commonly eat by the *Europeans)* requires a previous fermentation, in order to break the glutinous viſcidity which it acquires by being mixed with water, and thus to ſubdue, out of the body, the mucous tenacity of its oils, and make them more miſcible with the different humours; which, otherwiſe, people in the beſt health, and with the ſtrongeſt force of digeſtion, find a difficulty in doing. Few can live altogether on ſhip puddings, dumplings, or the like, without being ſenſible of an oppreſſion and uneaſineſs. But eſpecially weak and exhauſted people cannot well receive the neceſſary nouriſhment from ſuch ſpecies of the mealy ſubſtances, until their *lentor* or mucoſity is ſubdued by fermentation, or by ſome other method, by which they become lighter food. It is plain, that ſuch a glutinous and viſcid chyle as is afforded by hard ſea biſcuit, dumplings, ſhip-puddings, &c. requires the

moſt perfect ſtate of organs in the ſubſequent concoction for its farther elaboration *(t)*.

Hence the effects of the above diet conſtantly uſed, are twofold.

1*ſt*, Chyle is by this means wanting of a proper quality to dilute and ſweeten the acrimonious animal juices, to correct the putreſcent tendency of the humours, and to repair the decay of the body. We find, that ſuch a groſs, ropy, and viſcid chyle, cannot, in ſcorbutic caſes, be rightly incorporated with the blood, or converted into nouriſhment. And this weakneſs of digeſtion, or want of aſſimilation of the aliment in ſuch perſons (by conſidering the effects produced by the prediſpoſing cauſes of their malady) will appear to be more owing to a fault in the organs of ſanguification, than in the firſt con-

(t) It may be ſaid, That as freſh fleſh and fiſh are much more apt to become putrid out of the body than dried and ſalt fleſh and fiſh, the latter ought not to produce the ſcurvy; and the farines do not putrify ſo ſoon as animal food does; and the leſs they are animaliſed, the leſs putreſcent they become. This only proves how little we can learn of the effects of food and medicines in the body, by experiments made out of it. In a deep ſcurvy, there is the higheſt degree of putrefaction which a living animal can well ſubſiſt under: yet if we were ſo lucky as to find out the moſt powerful antiſeptic in nature, it is not probable the ſcurvy could be thereby cured; although the body, after death, might be preſerved by it as long as an *Ægyptian* mummy. On the contrary, the moſt putrid ſcurvies are daily cured by what quickly becomes highly putreſcent out of the body, *viz.* broth made of coleworts and cabbage. Theſe herbs tend ſtrongly to putrefaction in the air, and perhaps run into this ſtate ſooner than any other vegetables. However contradictory to ſome modern theories theſe facts may be, the truth of them is undeniable.

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coction. Theſe are much weakened, commonly by want of exerciſe, often by preceding ſickneſs, and always by the univerſal lax ſtate of their fibres. But eſpecially, as the chief prediſpoſing cauſe of this diſeaſe is a moiſt damp air, the action of the lungs *(u)*, the principal organ of ſanguification, is thereby impaired and weakened. It is rendered imperſpirable, as we ſhall more fully ſee afterwards. Groſs viſcid aliment, though it may be ſubdued in the firſt paſſages, and divided by diluting it, ſo as to entet the lacteals; yet, like ſtarch paſſed through a ſieve, it unites again; and its viſcous tenacity and *lentor*, from a defect of energy in the ſolids and lungs, can never be broken to a ſufficient degree of fineneſs, to nouriſh the body; nor can it be perfectly aſſimilated with the other juices. Hence a tendency to a ſpontaneous putrefaction, from want of proper chyle and nouriſhment; and ſymptoms, as will appear afterwards, the ſame as in people ſtarved.

But farther, this crude chyle not being either elaborated, or expelled the body, it muſt, by repeated circulations, and continuing long

(u) That it is greatly a fault in that bowel, as has been explained, which prevents the aſſimilation in ſcorbutic caſes, ſeems to be confirmed from the true *maculæ ſcorbuticæ* being common to patients in conſumptions when the lungs are ulcerated and deſtroyed. I had lately a patient in this caſe, whoſe body was covered with them before death. Upon preſſing the pulſe pretty hard, true red and livid *ecthymoſes* appeared. Such perſons are ſubject to aphthous diſorders in the mouth, hæmorrhages, dyſenteries, &c.

there, become acrid and putrid, together with the other juices.

2*dly*, The tenacity of ſuch aliment concurs in ſcorbutic caſes; where the perſpiration is already leſſened, in a manner altogether to ſtop it. Indeed ſuch a diet naturally leſſens it, without the concurrence of other cauſes: for a laudable perſpiration can only proceed from a duly-prepared and well-concocted humour, obtained from ſuch aliment as is thin, light, and eaſy of digeſtion. The matter of perſpiration is the laſt and moſt elaborate humour of the body: the perfection of which depends upon its being reduced to the moſt imperceptible tenuity, by a compleat and thorough elaboration in all the different concoctions it undergoes. Hence all groſs indigeſtible aliment is found to be imperſpirable. This all ſtatical experiments confirm *(w)*. The effects of ſuch viſcid imperſpirable food are particularly deſcribed by *Sanctorius*: "Imperſpirable food begets obſtructions, cor-"ruption, laſſitude, grief, and heavineſs of "the body" *(x)*. Theſe are the moſt remarkable ſcorbutic ſymptoms.

Upon the whole, the caſe of ſcorbutic people appears plainly to be a weakened and relaxed ſtate of ſolids, with ſuch a condition of the blood as naturally tends to that ſpontaneous putrefaction which proceeds from want of

(w) Ubi eſt difficultas coctionis, ibi tarditas perſpirationis. Sanct. aph. 250.

(x) Aph. 262.

nouriſh-

nouriſhment (or a recruit of proper chyle to correct and ſweeten the acrid putreſcent juices) and from a remarkable ſtoppage of perſpiration. This is evinced not only from the known and certain effects of the cauſes which give riſe to their malady, but it hath the evidence alſo of ocular demonſtration. Their ſwelled œdematous legs, and ſpungy gums, denote the ſtate of their ſolids; their fœtid breath, ſtools, urine, ulcers, and blood, the condition of their fluids; and their ſpontaneous laſſitude, but eſpecially their dry, rough, or pellucid ſkins, prove a ſtoppage of perſpiration.

Now, in ſuch a ſtate, it may be aſked, What is proper to be done? Their perſpiration cannot well be reſtored by diaphoretics or ſudorifics. For though warm draughts of *decoct. lignor.* give a momentary relief to ſuch people, and in ſome few caſes a crude humour may thus be puſhed through the ſkin in ſo relaxed a ſtate of ſolids; yet ſuch a humour goes off generally, and more naturally, by urine. And there being here no proper matter fitted for inſenſible perſpiration, a change into a drier and purer air is not ſufficient to recover them. Nor can the lax ſolids be braced up to advantage, while the juices are corrupt and unſound, and aſſimilation and nutrition wanting: ſo that exerciſe, ſtimulants, bark, ſteel, and aſtringents, will not cure them. Nor will a diet of even freſh fleſh broths remove a high and virulent de-

gree of this diſeaſe, without the aſſiſtance of green vegetables.

We are upon this occaſion told a very remarkable ſtory by *Sinopæus (y)*. "There are "whole nations in *Tartary* who live altogether on milk and fleſh. Theſe people are "never ſeized with the ſmall-pox; but, on "the other hand, are ſubject to violent ſcurvies, which at times ſweep off as great "numbers as the ſmall-pox does of other "nations." He had four of them (two men, and two women, who had been taken priſoners) in the hoſpital at *Cronſtadt*, in the year 1733. The ſcurvy being epidemic there that ſpring, theſe poor people became affected with it, fell into profuſe hæmorrhages, and every one of them died.

This leads me to inquire into the virtues of freſh green vegetables, which ſeem ſo neceſſary to correct the bad qualities of other dry and hard food, and are experienced ſo effectually to prevent, and often cure this diſtemper.

Recent vegetables, freſh plants and fruits, are of a more tender texture than animals; and their parts being more eaſily ſeparable, by reaſon of the leſs force of their coheſion, and leſſer tenacity of their cementing *gluten*, they yield more eaſily to the dividing powers of our organs. They alſo contain leſs oil than either fleſh or the farines. But groſs

(y) *Paræg. medic.* p. 311.

oils

oils (eſpecially of the animal kind) ſeem not only to be the moſt unconquerable part of aliment; but, where there is already a corruption in the human body, may be apt, by becoming rancid, to acquire the higheſt and worſt degree of it.

As theſe are the moſt neceſſary and requiſite qualities in the preſent caſe, ſo perhaps by no other can all green freſh vegetables be characteriſed. There is no other particular virtue in which they all agree; a greater diverſity of qualities being found in vegetable than in animal ſubſtances. But, beſides what has been mentioned, vegetables have great and peculiar virtues in this diſeaſe, ariſing from a combination of various qualities; of which all vegetables poſſeſs one or more, in a higher or leſſer degree; and do from thence accordingly become more or leſs antiſcorbutic. The beſt remedies are furniſhed from a compoſition of different plants, moſt eminent for the properties required: and whatever ſimple poſſeſſes the moſt of theſe qualities, is, of all ſuch, the moſt ſerviceable and efficacious for preventing and curing the malady.

It is to be remarked, that, in moſt properties here requiſite, vegetables differ from animal ſubſtances. That there is a conſiderable difference in the conſtituent principles of vegetables and animals, is plainly proved by their chemical analyſis. In the latter, the ſalts are

found to be more volatile; and, by a great degree of fire, a volatile alcaleſcent ſalt is obtained from them: whereas a fixed alcaline ſalt is found copiouſly to abound in moſt vegetables when burnt; and indeed this laſt is properly of vegetable extraction.

But, without this chemical torture, which ſhews ſo great a diverſity in their component parts, many plants are of an aceſcent quality; whereas animal ſubſtances, on the contrary, are almoſt all of an alcaleſcent, or perhaps rather a putreſcent nature. It would indeed appear, that man, both from the ſtructure of his organs of digeſtion and appetite, was deſigned to feed both on animal and vegetable ſubſtances. But though we perceive a perſon in health, and of a ſound ſtate of body, has a wonderful faculty of converting almoſt all ſorts of alimentary ſubſtances into nouriſhment at times; yet experience ſhews, that no man can long bear a diet entirely of fleſh and fiſh without nauſeating it, unleſs corrected by bread, ſalt, vinegar, and acids; and that for the reaſon before obſerved, *viz.* becauſe the intention of digeſtion in the firſt paſſages is to draw from the aliment a milky, ſweet, white liquor, reſembling in quality a vegetable emulſion; not indeed acid, but aceſcent; contrary to the nature of animal ſubſtances, which are obſerved in like circumſtances to become putrid. And for this and

other

other reaſons *(z)*, a mixture of vegetable ſubſtances ſeems requiſite towards the compoſition of good chyle, and to correct the continual putreſcent tendency of the animal humours.

Thus one quality entering the moſt perfect antiſcorbutic compoſition, is that of a vegetable aceſcency. Hence milk of all ſorts is experienced to be of great benefit in this diſeaſe, being a true vegetable emulſion of different herbs fed upon by the cattle. And acids of any kind are found uſeful; ſuch as vinegar, ſpirits of ſalt and vitriol; though far from being ſufficient either to prevent or cure the ſcurvy, as wanting ſome other properties much more neceſſary than acidity.

If it be ſaid, That ſcurvy-graſs, creſſes, and other acrid alcaleſcent plants, are found highly antiſcorbutic; it muſt likewiſe be remembered, that they are not perhaps altogether

(z) An. Cocchi. preſent profeſſor of anatomy at *Florence*, in his elegant academical diſcourſe on the *Pythagorean* diet, among other things obſerves, *Ciò che deve pienamente perſuadere ogni giuſto penſatore della ſalubrità e potenza del vitto vegetabile, ſi è il conſiderare gli orrendi effeti dell' aſtinenza da un tal vitto, ſe ella non è breviſſima, i quali s' incontrano amplamente e ſicuramente regiſtrati nelle narrazioni più intereſſanti e più autentiche degli affari umani. Le guerre, e gli aſſedi delle piazze, e i lunghi caſtrenſi ſoggiorni, le lontane navigazioni, le popolazioni de' paeſi incolti e marittimi, le famoſe peſtilenze, e le vite degli uomini illuſtri, ſomminiſtrano a chi intende le leggi della natura, incontraſtabili evidenze della malvagia e velenoſa attività del vitto contrario al freſco vegetabile.* P. 65.

Freſchi vegetabili ho ſempre detto, perchè i ſecchi anno quaſi tutte le incomode qualità de' cibi animali, maſſime eſſendo le loro particelle troppo fortemente coerenti terreſtri ed oleoſe. P. 49.

ſo

ſo efficacious as the aceſcent fruits; or at leaſt become much more ſo by the addition of lemon-juice, oranges, or a little ſorrel; which laſt the *Greenlanders (a)* are taught by experience to join with them for their cure: *the chief and moſt eſſentially requiſite quality* in the antiſcorbutic compoſition, *viz. a ſaponaceous, attenuating, and reſolving virtue*, poſſeſſed by ſuch acrid vegetables in the moſt eminent degree, being thereby heightened, improved, and exerted in its full force.

Soap is a mixture of oil and ſalt; by means of which various ſubſtances are brought intimately to mix together, and to incorporate, which otherwiſe they would not do. And whether the ſalt be acid, alcaline, or neuter, it is found to have this property. Soap is likewiſe a powerful attenuant of viſcid ſubſtances; for which purpoſe ſomething ſaline is always required. Now, in this characteriſtic, all ſucculent plants, roots, and fruits agree; and whether their ſalts be of an ammoniacal or nitrous quality, the compoſition in all is truly ſaponaceous.

It has been obſerved, that water alone may, by its intervention, dilute, and keep aſunder for a while, the parts of viſcid and groſs food; and that in this manner they may even paſs the lacteals; but, upon coming again into contact, they naturally will cohere. Now, this tenacity is beſt deſtroyed by vegetable ſoaps, and the juices of ſuch herbs and fruits

(a) See chap. 5.

as are of an attenuating and reſolving quality. We find, that, by the immoderate uſe of ſummer-fruits, the whole humours of the body may be melted down. Hence *diarrhœas, cholera morbus, &c.* ſo frequent at that ſeaſon. But though the abuſe of them proves ſo hurtful, yet they were certainly deſigned for the benefit of mankind. And in the preſent caſe they become eminently ſerviceable, from their ſalutary compoſition. They conſiſt of a great quantity of water, whereby they dilute; of mucilaginous parts, by which they obtund the ſtimulating putrefactive acrimony; and of a fine penetrating ſalt, antiſeptic in the human body.

Moreover, as, by the ſcorbutic putrefaction, the *craſis* of the blood was broken and diſſolved, theſe give a homogeneous and ſaponaceous quality to the whole maſs. At the ſame time they prove greatly aperient, in ſcouring and cleanſing the furred and obſtructed paſſages of the machine, eſpecially the different emunctories. And thus the acrimony firſt blunted by theſe ſoaps, is expelled the body *(b)*.

The chyle, by their means likewiſe, being imbued with a ſaponaceous and diluting quality, is now rendered miſcible with the other humours, and fitted for the uſes of nouriſhment and perſpiration. Accordingly, we con-

(b) They generally, upon firſt uſing, open the belly, promote urine plentifully, and reſtore perſpiration; but if voraciouſly eat, induce a dangerous flux of the belly.

ſtantly experience good effects in this diſeaſe, from whatever ſubdues the viſcidity of the chyle, and makes it more ſaponaceous; as even ſoap itſelf, honey, but eſpecially *oxym. ſcillit.* or pills made of ſoap and ſquills; and likewiſe whatever, as *Sanctorius* obſerves, either perſpires itſelf, or aſſiſts the perſpiration of other food; as moſt of the acrid antiſcorbutics. And for this purpoſe he recommends ſome of the beſt of them, *viz.* onions and garlic *(c)*, ale *(d)*, wine moderately uſed *(e)*; and in particular well-baked bread *(f)*. Theſe, according to his remarks, not only perſpiring freely themſelves, but by promoting the concoction and aſſimilation of groſſer foods, fit them alſo for this ſecretion.

Laſtly, There is another property peculiar to many green vegetables, and eſpecially to the riper fruits, which are found ſo beneficial here; and it is, that fermentative quality, by which they are preſerved longer from corruption, both without and within the body. For whereas fleſh and animal ſubſtances, without any other intermediate ſtate, tend directly to putrefaction; vegetables are preſerved longer from it by a fermentative tendency, which many vegetable juices naturally have, or may acquire by the addition of a proper ferment. We evidently ſee in this diſeaſe the good effects of ſpruce beer, cyder, ale, wine, and other vinous liquors, prone to fall into this

(c) *Aph.* 283. (d) *Aph.* 282.
(e) *Aph.* 369. (f) *Aph.* 210.

ſtate

ſtate in the ſtomach; on the contrary, the pernicious effects of diſtilled ſpirits, which check ſuch a fermentation. And I am of opinion, for ſeveral reaſons, that this is ſome how neceſſary to the perfection of animal digeſtion.

In a ſituation ſimilar to that of the ſtomach, with regard to heat, moiſture and air, many ſubſtances muſt naturally fall into a fermentation. We are certain by their effects, that ripe fruits and ſome vegetables cannot well be prevented from it, and actually do often ferment in the ſtomach: and obſerving, that, in the ſcurvy *(g)*, and ſome other diſeaſes, food of this tendency is requiſite, and that abſtinence from it is prejudicial; hence we conclude, that this operation, and food which tends to promote it, is neceſſary to digeſtion, and to prevent the ſcorbutic corruption.

The fermentation here is certainly never completed: but the effects of a beginning fermentation are ſtill very powerful, though ſoon ſtopt; as will appear to thoſe who are acquainted with the ſurpriſing effects of the ſubtile imperceptible *gas*, which is ſet free from ſuch ſubſtances in this act.

(g) Kramer obſerved, that in a thouſand patients he had cured by the juices of ſcurvy-graſs and creſſes, each doſe of the juices occaſioned prodigious belchings and wind. It was ſo uncommon, that he imagined it proceeded from the active and volatile ſalts of the herbs ſet looſe in the ſtomach; to which he aſcribed their cure. He therefore ſtrictly injoined his patients, to prevent as much as poſſible theſe ſalts from making their eſcape in this way.

As

As animal digeſtion is a proceſs *ſui generis*, which no chemical operation has been found to imitate; none being able to convert food into chyle, or that into blood; all we can infer from experience, is, that in certain caſes, as in the ſcurvy, vegetable juices and fruits of this tendency are found neceſſary to preſerve health and life. If fleſh, or animal ſubſtances, promote this proceſs in the ſtomach, as would ſeem by ſome late experiments *(b)*; we may from thence fairly conclude, fleſh-ſoops ſtuffed with vegetables to be eminently antiſcorbutic, which daily and inconteſtable experience ſufficiently confirms.

Upon the whole, it follows, and will be found true in fact, that the more any food, drink, herbs, or medicine, partake of any of the aforeſaid qualities, the more antiſcorbutic they become; but that the moſt perfect and effectual remedies are found in a compoſition of different ingredients, each poſſeſſing in a high degree one or other of thoſe virtues, from the combination of which, a vegetable, ſaponaceous, fermentable acid may reſult. Such an acid, ready prepared, is to be had in a certain degree in oranges, and moſt ripening ſub-acid fruits; from whence they become the moſt effectual preſervatives againſt this diſtemper.

(b) *Pringle's* experiment 33.

CHAP.

CHAP. VII.

Diſſections.

THE appearances in ſcorbutic dead bodies, are here diſtinguiſhed under different numbers, for the convenience of making proper references to them in the following chapter.

N° 1. contains the obſervations made by Lord *Anſon*'s ſurgeons upon the blood of their patients, and upon the diſſection of dead bodies, in the ſeveral ſtages of this diſtemper at ſea. N° 2. a diſſection made upon one of *Jaques Cartier*'s crew *(a)*. N° 3. to 21. *incluſive*, is Mr. *Poupart*'s account of many, and very accurate diſſections of ſcorbutic bodies, in the hoſpital of *St. Lewis* at *Paris*, in the year 1699 *(b)*.

N° 1. In the beginning of the diſeaſe, the blood, as it flowed out of the orifice of the wound, might be ſeen to run in different ſhades of light and dark ſtreaks. When the malady was increaſed, it ran thin, and ſeemingly very black; and after ſtanding ſome time in the porringer, turned thick, of a dark muddy colour; the ſurface in many places of a greeniſh hue, without any regular ſeparation of its parts. In the third degree of the diſeaſe, it came out as black as ink; and

(a) See Part 3. chap. 1.

(b) Etranges effets du ſcorbut arrivez à Paris, par. M. Poupart. Memoirs de l' academie des ſcience, 1699, p. 237.

though

though kept ſtirring in the veſſel many hours, its fibrous parts had only the appearance of a quantity of wool or hair, floating in a muddy ſubſtance. In diſſected bodies, the blood in the veins was ſo entirely broken, that, by cutting any conſiderable branch, you might empty the part to which it belonged of its black and yellow liquor; and when found extravaſated, it was all of the ſame kind. *Laſtly*, As all other kinds of hæmorrhages were frequent at the latter end of the calamity, the fluid had the ſame appearance as to colour and conſiſtence, whether it was diſcharged from the mouth, noſe, ſtomach, inteſtines, or any other part.

2. The heart was found white and putrid; its cavities were quite full of corrupted blood. The lungs were blackiſh and putrid; more than a quart of reddiſh water was found in the *thorax*. The liver was pretty ſound; but the ſpleen ſomewhat corrupted, and rough as if it had been rubbed againſt a ſtone.

3. All thoſe who had any difficulty of breathing, or their breaſts ſtuffed or ſtopped up, had there a quantity of *ſerum*; and we found more or leſs of it according as they were oppreſſed.

4. The breaſt, belly, and ſeveral other parts of the body, were filled with this lymph or *ſerum*; which was of different colours; and ſo corroſive, that having put our hands into it, the ſkin of them came off, attended with heat and inflammation.

5. We

5. We have ſeen ſome whoſe breaſt was ſo oppreſſed, that they died all of a ſudden. In the mean time, we found no *ſerum*, neither in their breaſts nor in their lungs. But the *pericardium* was entirely faſtened to the lungs; and the lungs were glued to the *pleura* and *diaphragm*. All the parts were ſo mixed and blended with each other, that they made up but one maſs or lump, ſo confounded that one could ſcarce diſtinguiſh one from another. As the lungs were ſqueezed together in the midſt of this maſs, they were deprived of their motion, and the ſick perſon was choked for want of breath.

6. All they who died ſuddenly, without any viſible cauſe of their death, had the auricles of their heart as big as one's fiſt, and full of coagulated blood.

7. We have ſeen ſeveral, who without pain dropped down dead. They had no apparent ſickneſs; only their gums were ulcerated, without any ſpots or hardneſs on their ſkin: yet we found their muſcles were gangrened, and ſtuffed with a black corrupted blood; and upon handling them, they fell to pieces.

8. A youth of ten years had his gums much ſwelled, and deeply ulcerated; his breath intolerably ſtinking. The ſurgeon was obliged to pull out all his teeth, for the better dreſſing of his mouth. There appeared afterwards ulcers upon his tongue and cheek. He died all of a ſudden, and his bowels were found corrupted.

9. Some with no other ſymptoms but ſlight ulcerations of their gums, had afterwards ſmall red hard tumours on their hands, feet, and other parts of their body: after which there appeared impoſthumes in their groin, and under their arm-pits, together with blue ſpots on their body. We found the glands under their arm-pits very big, and ſurrounded with matter; as well as the muſcles of their arms and thighs, whoſe interſtices were all filled with it.

10. We obſerved ſome whoſe arms, legs, and thighs, were of a reddiſh black. This proceeded from that black and coagulated blood which was always found under the ſkin of thoſe perſons.

11. We alſo found their muſcles ſwelled and hard. This was occaſioned by blood fixed in the body of the muſcles, which were ſometimes ſo full of it, that their legs remained bent, without being able to extend or ſtretch them out.

12. The blue, red, yellow, and black ſpots, which appeared on the body, proceeded purely from extravaſated blood under the ſkin. As long as the blood kept its red colour, the ſpot was red; if the blood was black and coagulated, the ſpot was alſo black, *&c.*

13. We ſometimes obſerved certain ſmall tumours, which, upon breaking, formed ſcorbutic ulcers. They proceeded from the blood, with which the tumour was filled: for as often

ten as we took off the plaiſter, we ſtill found under it a great deal of coagulated blood.

14. Some old perſons have ſuch large bleedings from the noſe and mouth, that they died of them. The coats of the veſſels were corroded and eat through by the ſharp and corroſive humour.

15. In ſome, when moved, we heard a ſmall grating of the bones. Upon opening thoſe bodies, the *epiphyſes* were found entirely ſeparated from the bones; which, by rubbing againſt each other, occaſioned this noiſe. In ſome we perceived a ſmall low noiſe when they breathed. In thoſe the cartilages of the *ſternum* were found ſeparated from the bony part of the ribs.

16. All thoſe in whoſe breaſt any matter or *ſerum* was found, had their ribs thus ſeparated from the cartilages, and the bony part of the rib next the *ſternum* carious for four fingers breadth.

17. There were ſome dead bodies, in which, if we ſqueezed, betwixt two fingers, the end of the ribs which began to be ſeparated from the cartilages, there came abundance of corrupted matter. This was the ſpungy part of the bone: ſo that, after ſqueezing, there remained nothing of the rib but the two bony plates.

18. The ligaments of the joints were corroded and looſe. Inſtead of finding in the cavities of the joints the uſual ſweet oily mucilage, there was only a greeniſh liquor;

which, by its cauſtic quality, had corroded the ligaments.

19. All the young perſons under eighteen had in ſome degree their *epiphyſes* ſeparated from the body of the bone; this water having penetrated into the very ſubſtance of it.

20. In ſcorbutic people the glands of the meſentery are generally obſtructed and ſwelled. Some of theſe were found partly corrupted and impoſthumated. In the liver of ſome few, the matter or corruption was hardened, and, as it were, petrified. Their ſpleen was three times bigger than natural; and fell to pieces, as if compoſed of coagulated blood. Sometimes the kidneys and breaſt were full of impoſthumes.

21. What was very ſurpriſing, the brains of theſe poor creatures were always ſound and entire, and they preſerved their appetite to the laſt.

CHAP. VIII.

The nature of the ſymptoms, deduced and explained from the foregoing theory and diſſections.

THE ſymptoms moſt commonly preceding the others in this diſeaſe, is a preternatural change of colour in the face. To explain this, it muſt be underſtood, that the ſolids in the human body are extremely ſmall in proportion to the fluid parts; as appears plainly in the caſe of inanition and atrophies.

But

But the colour of the whole body, eſpecially the face, principally depends upon the nature and condition of the latter. We obſerve, a ſmall quantity of bile mixed with the blood, tinges the whole ſurface of a living body; and a lucky anatomical injection will give any deſigned colour to that of a dead one. A natural and lively colour in the face denotes a well-conditioned, healthful, and homogeneous ſtate of blood; ſuch as is produced by the integrity of all the digeſtive powers, by the action of ſuch good lungs, and elaſtic ſolids, as perfectly digeſt and aſſimilate the chyle into an animal nature. Paleneſs of the face, and a bloated complexion, are, on the contrary, ſigns of weakly fibres, and of a degeneracy of the humours, from the aforeſaid ſound and healthy condition, into a crude and morbid ſtate.

The chyle is white when it enters the blood: but if (as in ſcorbutic caſes) it remains there unſubdued, by reaſon of its viſcidity, and the weakneſs of the concoctive faculties, it undergoes different changes of colour, and from white becomes yellow, greeniſh, livid, *&c.* This will be viſibly diſcovered in the countenance through the tranſlucent veſſels of the ſkin; where the leaſt alteration of colour in the fluids is eaſily perceptible; eſpecially where theſe veſſels lie moſt expoſed, in the lips, gums, caruncles of the eye, *&c.*

But this crude heterogeneous humour diſtending the veſſels in an inert ſtate of ſolids,

will naturally either ſtagnate in the lateral capillaries, where with difficulty it can be propelled forwards; or be extravaſated in the *tunica adipoſa*, at the greateſt diſtance from the heart, where the circulation is moſt languid, and a *niſus*, contrary to its own gravity, required to puſh it on; as in the legs, when in an erect poſture. Hence ſuch perſons are obſerved to have œdematous ſwellings at firſt about their ancles, and on their legs. As the habit becomes overloaded with a greater quantity of ſuch crudities, theſe tumours increaſe; and other parts likewiſe, eſpecially in the face, ſometimes the whole body, becomes pale, ſwelled, and bloated.

Where the chyle is not aſſimilated, ſo as to nouriſh the body, the *moles movenda* is increaſed (or a quantity of ſuch humours is daily accumulated); mean while the *vires moventes* are diminiſhed: the ſtrength and vigour of our bodies being ſupported chiefly by well-digeſted food. Hence a laſſitude, heavineſs, and an averſion to exerciſe.

A ſudden and remarkable proſtration of ſtrength is indeed obſerved conſtantly to attend all putrid diſeaſes *(a)*; of which this is the higheſt degree of the chronic kind. But in the caſe of ſcorbutic people, it is ſomewhat ſingular, and peculiar to them, that though when at reſt they find themſelves quite well; yet, upon the leaſt exerciſe, they are ſubject, at firſt, to a panting and breathleſſneſs; which,

(a) Vid. Hoffman. de putredine.

as

as the diſeaſe increaſes, degenerates into a proneneſs to faint; and, laſtly, in the height of the malady, upon uſing exerciſe, or an exertion of their ſtrength, or upon being expoſed to a ſudden change of air, they are apt to drop down dead.

In order to ſet this in a clear light, it muſt be obſerved, that although the ſcorbutic laſſitude in general is owing to an obſtructed perſpiration; yet it does not ſo much proceed from the weight of four or five pounds retained in the body (which might eaſily be carried about by any perſon, without uneaſineſs, or being felt) as from the *vires imminutæ*, or the relaxed ſtate of their fibres. In like manner, the more peculiar ſymptoms mentioned, are produced by the effects of this obſtruction, particularly in the lungs.

Perhaps it may be difficult to aſcertain the exact quantity of perſpirable matter ſent off from thence *(b)*. But it will appear to be a very great proportion, if we conſider the vaſt extent of the perſpirable ſurface of that organ, the watery vapour conſtantly emitted from it ſo viſible in a cold air, and the juſt obſervation of *Sanctorius*, "That it is a ſign of health, "when, after aſcending a ſteep place, the "body feels lighter" *(c)*; which would ſeem beſt explained, by allowing a freer circulation

(b) Sanctorius attempted it by breathing upon a glaſs: but Dr. *Hales* has made more accurate experiments.

(c) Aph. 17.

of the blood at this time through the lungs, when freed from perſpirable matter.

But ſuch a moiſt air as is productive of the ſcurvy, is already replete with humidity: ſo that the moiſture continually iſſuing from the lungs, cannot be abſorbed by it. On the contrary, the wet external air is continually drawn into the veſicles; by which this bowel is oppreſſed, not only with its own natural moiſture, but is kept as it were in a continual watry bath of external air. Hence it becomes ſurcharged with a ſerous *colluvies*; its tone is conſequently weakened, and ſome of its ſmaller capillary veſſels are neceſſarily compreſſed and obſtructed.

When the body is at reſt, the circulation is languid and ſlow: the blood then, in a ſmall quantity, glides gently through the lungs, notwithſtanding the obſtruction in them. But when, upon uſing exerciſe, or an exertion of ſtrength, the velocity of the blood is accelerated, and a much greater quantity, *viz.* that which, when at reſt, was almoſt ſtagnating in the veins, is at once returned into the right cavities of the heart, and from thence into the lungs; the weakened and obſtructed veſſels of the lungs not being able ſo quickly to tranſmit ſo great a quantity, the blood is neceſſarily accumulated in the *ſinus venoſus*, right auricle and ventricle of the heart: which cauſes a breathleſſneſs and panting; that is, an effort is made by all the powers ſubſervent to reſpiration, to dilate the breaſt fuller and

more

more frequently, for the paſſage of this increaſed quantity of blood.

This will receive confirmation by ſeveral conſiderations; as, that upon exerting a degree of ſtrength, we hold in our breath; as alſo that the right ventricle of the heart is larger than the left ventricle, the *ſyſtole* of both is *ſynchronous*, and yet, what is ſingular, the pulmonary vein is leſs than the pulmonary artery.

But when the perſpiration has been long obſtructed by this damp air, which, as *Sanctorius* ſays, turns the perſpirable matter into *ſerum*, or an *ichor*, as he calls it *(d)*, which is found to be truly the caſe in ſcorbutic people upon diſſection (ſee chap. 7. N° 2. and 3.) the paſſage of the blood through the lungs muſt ſtill be more ſtraitened. Hence, upon the leaſt motion of the body, by which the circulation is quickened, and a greater quantity of blood ſent at once into the heart, the heart becomes in ſuch caſes not able to overcome the reſiſtance it meets with in forcing the blood through the lungs, as well as the weakened unelaſtic arteries. Whence, as before obſerved, the blood being accumulated, and ſtagnating as it were, in the cavities of the heart, there muſt follow an almoſt entire ſtoppage of the circulation for ſome time, a pauſe and ceſſation of the vital motions for a little; that is, the patient muſt faint away, till, by the exertion of the vital principle, and

(d) Aph. 146.

the

the heart being evacuated by the perſon's lying at reſt, the circulation is again quickened, and he recovers *(e)*.

Laſtly, It appears by the weakneſs and feebleneſs of the pulſe, and many other ſymptoms in this diſeaſe, as likewiſe from the known effect of putrefaction on animal bodies, by which the fibres are always rendered ſofter and tenderer, that the whole ſyſtem of ſolids is in the moſt relaxed and weakened condition. Even the heart itſelf was found putrid (N° 2.) whoſe force to circulate the blood is not indefinite, more than its cavities, which can contain only a proportioned quantity. The firſt is certainly here greatly impaired; while the latter, or its cavities, were found preternaturally weakened and dilated (N° 6.). In this ſtate, ſuch people are apt to drop down dead upon an exertion of their ſtrength, or from exerciſe, but eſpecially upon being expoſed to a ſudden chage of air; that is, by removing them at once from the warm and moiſt air in the hold of a ſhip *(f)*, into a colder, drier,

(e) The ſwoonings of ſcorbutic perſons are different from what happen to very weak and exhauſted people in other diſeaſes, upon being raiſed up. When they ſit, they are quite hearty, and have a conſiderable degree of ſtrength.

(f) The air in the hold of a ſhip is always moiſter than even upon the upper deck. This is owing to the cables, and the other contents of the hold, not having a free circulation of air or wind, to dry up the water, either of the ſea or rains, poured down upon them. Places below become alſo extremely moiſt, by the freſh water and beer ſpilt in pumping them from the caſks, by the bilge-water, and by the cutaneous and pulmonary perſpiration of a number of people pent up in the ſick-apartment.

and

and purer air. For the effect of this is, to conſtringe the whole external habit of the body, and to drive the blood at once with great force from thence towards the heart; at which time the velocity, as well as quantity of it, is increaſed in the internal parts. So that the heart is not able to overcome the reſiſtance it meets with in the weak and unſound lungs (whoſe veſſels are alſo ſtraitened by the contact of ſuch freſh air); nor in the arteries, which will be in proportion to the quantity of blood with which they remain diſtended. But the weak unelaſtic arterial ſyſtem is not here able to contract and propel the blood in their canals. On the contrary, the cutaneous veſſels being thus conſtringed by the external air, the blood may perhaps have, as it were for an inſtant, a retrograde motion towards the heart, which this debilitated muſcle (N° 2.) cannot overcome. Hence ſuch people drop down dead ſuddenly, without any other viſible cauſe of their death found upon diſſection (N° 6.) than the weakened auricles of their heart aneuriſmatic, and diſtended with blood. They are obſerved to have a panting or breathleſſneſs for about half a minute before they expire *(g)*.

(g) Why only the auricles of the heart in this caſe become aneuriſmatic, *vid. Lanciſ. de aneuriſmatibus in genere, prop.* 52. This ſpecies of ſudden death is called by the great *Harvey*, *ſuffocatio ob copiam*; and is beautifully illuſtrated by his experiment, *Exercitat.* 1. *de motu cordis.*

In

In Lord *Anſon*'s crew it was remarked, that a ſtraitneſs of the breaſt, with an obſtinate coſtiveneſs, was one of the moſt dangerous and fatal ſymptoms. Now, in this caſe, there was no relief to the breaſt, no evacuation to free it from the load of obſtructed perſpiration; part of which, do doubt, may be carried off by ſtool. Accordingly, where a derivation is made of the humours in ſcorbutic people by an open belly, their breaſts are generally found much eaſier.

Of the ſame kind perhaps with the perſpiration from the lungs, and external ſurface of the ſkin, is that moiſture continually exhaling from all parts within the cavities of the body. It is at leaſt ſupplied by the like means, *viz.* from proper aliment. By it the bowels, and their cavities, are kept ſeparate, and prevented from adhering to each other. This being wanting in ſome, proved probably the occaſion of their death (N° 5.); while in others the corrupted and putrified ſtate of their body put an end to their lives, (N° 7. 8. 9.).

I come now to account for the pathognomic ſigns of this diſeaſe, *viz.* the putrid gums, *&c.* I ſhall upon this occaſion obſerve, that although it is no eaſy matter to ſay why, in ſeveral general and univerſal diſorders of the body, ſome particular parts are only or principally affected, while others, in ſuch a ſtate of almoſt univerſal corruption and putrefaction,

tion, as in the ſcurvy, continue to perform their functions as in health (ſee N° 21.); yet we may hereby perceive the goodneſs of Providence, who, by certain ſigns peculiar to each diſeaſe, points out the malady, and gives us a medical and demonſtrative certainty of its exiſtence. But as our inquiry is not into final cauſes, I ſhall endeavour to account for theſe ſymptoms in the mechanical way.

Putrid gums, a ſtinking breath, and looſening of the teeth, we find alſo in perſons who, by long faſting, are deprived of a ſupply of freſh chyle. This confirms what I obſerved before, that the ſcorbutic corruption is of that ſpecies which is the natural effect of heat and motion; the humours of the body, from want of a proper chyle to dilute and ſweeten them, becoming rank and putreſcent. In ſeveral orders of different religions, thoſe who are obliged, by way of penance, to abſtain a conſiderable time from food, perceive their breath become fœtid, their teeth looſe, their gums ſpungy and ſoft *(i)*. The ſame ſymptoms are alſo obſerved in thoſe who are ſtarved to death *(k)*. In all thoſe, as well as in ſcorbutic caſes, theſe ſymptoms ſeem principally owing to the *ſaliva*; which, upon ſuch occaſions, becomes acrid. Every one's expe-

(i) I have always obſerved men of the rigorous orders in the church of *Rome* greatly ſcorbutic. They are remarkable for rotten gums (part of which is commonly eat away) want of teeth, and a moſt offenſive breath.

(k) Vid. Tſchirnhauſ. medicin. corporis, p. 23. Liſter de humoribus, cap. 12.

rience muſt convince him it is more ſo after ten or twelve hours abſtinence from food, than at other times.

But to underſtand more particularly why the gums are principally, and often firſt, affected by this acrimony, it muſt be obſerved, that the veſſels here lie very much expoſed to the external air; which has a great effect in haſtening corruption, to which the *reliquiæ ciborum* may contribute. At the ſame time their ſubſtance is the moſt tenſe and hard of any part of the mouth *(l)*, and perhaps of the whole body. Now, by the acrimony of the blood, *ſaliva*, or other juices, we may be ſuppoſed to underſtand a change of figure in their particles; from being ſoft, blunt, and obtuſe, to ſomewhat ſharp, angular, and pointed. Hence the effect of acrimony on the human body is, to ſtimulate and irritate the parts.

Thus, in the gums, theſe acrimonious particles occaſion at firſt an uneaſy itching. But they are more tenſe, and conſequently more elaſtic, than any other parts of the mouth. The oſcillations or contractions of the very numerous veſſels, therefore, will here proportionally be greatly increaſed; and thence action and reaction become in this place greater than in any other. The blood is conſequently more moved, broken, and protruded even into the dilated lateral veſſels (according to the *Boerhaavian* ſyſtem); which in ſuch

(l) See *Winſlow expoſ. anatom. de la ſtructure du corps humain.*

a caſe

a caſe will admit larger globules than can paſs through their extremities. They therefore appear ſwelled, and diſtended with a livid blood; and in this ſtate are apt to bleed upon the leaſt friction of their tender dilated veſſels. But the reſiſtence of the ſolids being at laſt quite overcome, and their elaſticity deſtroyed, the blood muſt ſtagnate in all the veſſels; and, by ſtagnation and reſt, of courſe becoming more acrid, corrode their coats, and bring on a general ſtate of corruption and putrefaction on theſe parts.

The effects indeed of ſuch acrimonious juices are felt univerſally in the body upon any increaſe of motion, and conſequently of their force againſt the containing veſſels; ſcorbutic people being moſt ſenſible of their pains upon motion or exerciſe of any ſort, according to the known axiom, *Acria nulla agunt ſi non moveantur.*

It was obſerved before, that the depending ſituation of the legs in an erect or ſitting poſture, particularly determined the humours to ſtagnation there, in the very beginning of the diſeaſe; which in the increaſe of it often become monſtrouſly ſwelled. But ſuch ſtagnating corrupt blood and humours are, upon the leaſt rupture of the ſkin, apt to form into ſcorbutic ulcers. Theſe generally occur upon the ſhin; where the leaſt accidental ſqueeze makes a conſiderable bruiſe of the thin ſkin, againſt the hard and ſharp ſpine of the *tibia*.

Their appearance is truly deſcribed N° 13. and accounted for N° 10. and 11.

In ſuch a ſtate of blood (N° 1.) as appeared both in living and dead bodies, we have no reaſon to be ſurpriſed at the frequent hæmorrhages from all parts of the body, fluxes, dyſenteries, &c. to which ſuch people are ſubject; nor at its burſting out from the ſcars of old wounds in Lord *Anſon*'s crew. Theſe are, for many reaſons, liable to ſuch accidents; not only from the hard and imperſpirable *cicatrix* with which they are generally covered, but from a want here of the *tunica adipoſa*, into whoſe cells the extravaſated blood is poured, when it appears in ſpots on the body (N° 12.)

Putrefaction is found to be the moſt ſubtile of all diſſolvents, powerfully ſeparating and reſolving the component parts of putrifying bodies; and in particular, breaking and diſſolving the *craſis* of the blood. So that both here and in the plague, the ſpots appear altogether alike, as obſerved by *Diemerbroeck de peſte*.

The ſolids are in ſo weak a ſtate of coheſion, that the veſſels are apt to burſt and the blood to be extravaſated in great quantities. If this extravaſation happens very deep (as in N° 11.) it occaſions violent pains, which have often been obſerved *(l)* to be greatly relieved by the extravaſated blood changing its place, and being removed im-

(l) Vid. Van Swieten Comment. in Aphor. 1151.

mediately

mediately underneath the ſurface of the ſkin. It there ſometimes appears as if it was a gangrene in the fleſh, by which ſome ignorant ſurgeons have been miſled to make inciſions on the part, which have coſt ſome unfortunate patients their life. And in ſuch an univerſal weakneſs and laxity of the veſſels, it is not altogether improbable that ſometimes ſudden death has been owing to a rupture of a large veſſel.

There is ſomewhat indeed ſingular in the effects of the ſcorbutic acrimony upon the bones (ſee N° 15. 16. but particularly 17.); whereby it appears to affect chiefly the internal cellular part, which is known to be of a different texture from the outward bony *laminæ*. And from thence it is eaſy to account for thoſe remarkable caſes which occurred likewiſe in Lord *Anſon*'s ſquadron, where the *callus* of broken bones, which had been compleatly formed for a long time, was found diſſolved, and the fracture ſeemed as if it had never been conſolidated. It muſt be remembered, that the bones, like all the other parts of the body, are daily nouriſhed and repaired by the aliment. There are many inſtances of entire bones being generated in the body anew. And it appears, that a *callus* is not (as has been vulgarly ſuppoſed) a rude glutinous maſs, ſpued out from the extremities of the bones, by which they are glued together: but is really, like new fleſh generated in wounds with loſs of ſubſtance, a true organiſed

part reſtored, of the ſame cellular texture with the other parts of the bone; with this difference, that it wants the outward bony *lamella (m)*: ſo that, from this defect, it becomes, of all other parts of the bone, moſt liable to be affected by the ſcorbutic taint.

Now, if the humours of the body, in the advanced ſtages of this malady, are capable of acquiring ſo corroſive a degree of acrimony, that, like a *menſtruum*, they work upon and diſſolve the cellular texture of the very bones, it is natural to ſuppoſe, that the nutritious particles are here ſo much depraved in the very beginning, or where there is only a ſcorbutic habit of body, that no *callus* can be formed; of which Dr. *Mead* furniſhes us with a remarkable proof *(n)*. However, it is almoſt univerſally the caſe in the ſcurvy, as obſerved elſewhere *(o)*, that as long as any bone is ſufficiently defended by its external thick plates, it will not be found carious in this diſeaſe until broken and ſeparated (as in N° 16. and 17.); ſo that the humour has acceſs into the internal cellular ſubſtance of it. For this reaſon, it is rare to find a carious jaw, after the moſt virulent ulcers in the gums, unleſs by ſome accident, as the pulling out of a tooth, part of the *laminæ* of that bone has been broken. In the ſame manner, the

(m) *Vid. Ruſch theſaur. anatom. n.* 8.
(n) Diſcourſe on the ſcurvy, p. 107.
(o) Chap. 2.

teeth

teeth will likewiſe be preſerved ſound, if their outer coats are entire.

There is a reaſon aſſigned N° 18. for the loſs of motion which happens commonly to the joint of the knee in this diſeaſe. To which it may be added, that the lubricating liniment of the joints is ſaid to be partly compoſed of the perſpirable matter *(p)*; which being here either deficient, or degenerated into a morbid ſtate, may induce this ſymptom.

It likewiſe appears, that the only mucilage that lubricates the hard tendons, and their ſheaths, and which fits them for motion, is of a ſimilar nature with the liquor found in the cavities of the joints *(q)*. We have a proof of its extreme depravity in N° 18; ſo that they muſt neceſſarily become hard, contracted, and unfit for motion.

It is indeed the univerſal perſpiring humour, exhaling from all parts, both external and internal, of the body, which gives ſoftneſs, pliancy, and ſuppleneſs, to the whole machine. And it is a deficiency of this which occaſions hardneſs of the fleſh, contraction of limbs, want of motion, and indurated tendons in ſcorbutic caſes.

Laſtly, If we conſider the other appearances obſerved upon diſſection, *viz.* the ſwelled, obſtructed, and putrid ſtate of the *viſcera* (N° 20.); the rottenneſs of the heart itſelf (N° 2.); in ſome the univerſal putrefaction

(p) Vid. Van Swieten comment. in Boerhaave aph. 556.
(q) Vid Kaau de perſpiratione, n. 854.

of the body *(r)*, (N° 7. 8. and 9.); the cauſtic acrimony of the lymph found in its different cavities (N° 4.); with the condition of that vital fluid the blood, even when alive (N° 1.), where its dark and livid colour, but eſpecially the greeniſh hue, denoted the higheſt degree of putrefaction *(s)*; we ſhall have no reaſon to be ſurpriſed at the moſt extraordinary and anomalous ſymptoms, which ſometimes have occurred in this diſeaſe.

CHAP. IX.

The Supplement.

A letter from Dr. John Cook, *phyſician at* Hamilton, *giving an account of the ſcurvy in* Ruſſia, Tartary, *&c.*

I Here ſend you ſome brief remarks I made in general upon the ſcurvy in *Ruſſia*, *Tartary*, *&c.* in all which countries it is an endemic and dreadful diſeaſe.

Taverhoff lies in 52 deg. of N. lat. where the ſtream of the *Verona* is received into the *Don*. It is ſituated, as moſt towns on the banks of that river, on a low ſandy ſoil, and ſurrounded with lakes, marſhes, and woods. The winter commonly begins in the month

(r) Bachſtrom, p. 20. obſerves, that the dead bodies of ſcorbutic people corrupt much ſooner than others, and are attended with a remarkable *fœtor*.

(s) See Dr. *Pringle*'s experiments, exper. 45. on putrified blood.

of

of *October*. In *November*, all the rivers, lakes, and marſhes, are quite frozen over, and the whole country is covered with ſnow; which continues until about the beginning of *April*, O. S. At this time the ſnow ſuddenly melts away, leaving the earth covered with graſs, and many wholſome vegetables. The ſpring is ſo very ſhort, that the inhabitants are ſcarcely ſenſible of it: for in leſs than fifteen days the weather becomes exceſſive hot; and the cold froſty winter is ſuddenly expelled by a very warm ſummer, that continues until the month of *September*; during which time the weather is very hot and moiſt. When I was there in the years 1738 and 1739, 27,000 boors were employed in cutting wood, and preparing it for building of ſhips for the uſe of the army; as alſo about 5 or 600 ſailors, who were their overſeers, and between 2 and 3000 ſoldiers, who guarded the boors to prevent their making an eſcape. In the month of *February* 1738, the ſcurvy made its appearance. The boors were not ſo much afflicted with it as the ſailors, nor the ſailors ſo much as the ſoldiers. Many, both ſailors and ſoldiers, were ſent to our hoſpital this month; but their numbers were greatly increaſed in *March*. Towards the latter end of *April* they were moſtly recovered, and many were diſcharged from the hoſpital. In *June* none remained except the moſt inveterate caſes. In *July* an intermitting, and an obſtinate remitting fever, prevailed. From the 1ſt to the

20th of *Auguſt* we had but few patients. From that time to the 1ſt of *October*, agues raged with more violence than ever; and fluxes ſucceeded in *October*. This month the firſt ſnow fell; and at that time children were univerſally affected with ſore throats. We had afterwards ſettled froſty weather, and but little ſickneſs, except a few inflammatory fevers; until about the beginning of the year 1739, when the ſcurvy began to ſhew itſelf, much about the ſame time as in the preceding year, and continued its uſual length of time.

Aſtracan is ſituated in 46½ deg. N. lat. on a ſmall iſland waſhed by the *Volga*. Here are many ſalt lakes, both upon the iſlands and deſart. The garriſon-ſoldiers are much more ſubject to the ſcurvy than the boors, and theſe laſt than the ſailors. The ſoldiers live a very indolent life, having but little duty to perform. They eat hardly any thing elſe, even in their hoſpitals, beſides rye bread and meal, with fiſh; and have nothing but water for drink, except the decoctions preſcribed for them by the ſurgeons. Their hoſpitals are very damp and rotten. This poor garriſon of five regiments, conſiſting of about 6000 men when compleat, is yearly recruited with between 600 and 1000 men. The boors live alſo but a lazy indolent life; being employed either in fiſhing, or in navigating great boats, from *Aſtracan* ſometimes as far as *Tweer*. On the contrary, the ſailors work hard,

hard, at all times of the year, both in the docks and at ſea; and live much better, having good proviſions of all ſorts. The winter begins commonly in *October*, and continues till *March*. It is extremely ſevere during the months of *January* and *February*. The ſcurvy generally breaks out in the latter end of *February*. I found it here often complicated with other diſeaſes, *viz.* the *lues venerea*, agues, dropſies, *phthiſis*, *&c.* The violence of the diſtemper (except in complicated caſes) ſeldom continues after *June*, or to the middle of *July*.

Riga, the metropolis of *Livonia*, is the laſt place I ſhall mention. The winters are here very long. The ſoil for many miles about it is ſandy, and covered with many lakes, moſſes, and moraſſes. The boors living better than they do in *Ruſſia* and *Tartary*, are not ſo ſubject here to the ſcurvy as the ſoldiers in the army, nor theſe ſo much as the proper garriſon; for by their labour they gain money, and can purchaſe fleſh in winter. The garriſon-ſoldiers, conſiſting of between 6 and 7000 men, are moſt miſerably lodged. The walls of their ill-contrived barracks are continually moiſt and warm. At *Riga*, in the years 1749 and 1750, but eſpecially in the year 1751, the ſcurvy raged with the utmoſt violence. It broke out in the month of *February* that year. Here I ſaw the moſt dreadful ſpectacles that ever I beheld. Their rotten gums gangrened, as alſo their lips,

which dropped off; the *ſphacelus* ſpread to their cheeks, and muſcles of their lower jaw; and the jaw-bone in ſome fell down upon the *ſternum*. When the mortification firſt began, we tried the bark, to no purpoſe. Nothing but death rid the unhappy wretches of their frightful miſery.

Dr. *Nitzſch*'s method of cure *(a)* correſponds with, and is agreeable to the method practiſed in *Ruſſia*, eſpecially by the *German* phyſicians and ſurgeons. What he terms the *hot* or *painful ſcurvy*, is generally a complication of this diſeaſe with the pox. Although ſome may die in the ſtate he deſcribes, without having any outward ſwelling upon the body; yet ſuch perſons have always ſcirrhous ſwellings of the glands in the *abdomen*, particularly of the meſenteric glands, and of the liver, which are perceptible to the touch, even before death. My method of cure was in general as follows, unleſs ſome particular ſymptoms or caſes required me to deviate from it. I commonly began with a very gentle purge or two, and then gave the *decoct. antiſcorb. (b)*, and *eſſent. antiſcorb.* At *Aſtracan*, where there are whole fields of horſe-raddiſh, we gave the juice of *rad. raphan.* mixed with a very little brandy, twice a-day. The patients had freſh fleſh-meat every day, and what greens or ſalads we could procure

(a) Vid. Part 3.

(b) I preſume the Doctor means the *decoct ſum. pin. &c.* deſcribed by *Nitzſch*.

them.

them. They uſed the warm bath once or twice a-week. Before they eat, drank, or ſwallowed any medicines, their mouths were well gargariſed with ſolutions of nitre, *&c.* Their gums were dreſſed with *ung. Ægyptiac. tinct. myrrh. tinct. lacc. &c.* I obliged them to uſe exerciſe, and to walk about both forenoon and afternoon, when the weather would permit. I allowed them to ſleep moderately; and forbit them all dried, ſalt, and fat meats. Fumigating the wards, is common in all the hoſpitals in *Ruſſia*.

When I came home to this country, I found the denomination of *nervous diſorders* univerſally applied to moſt chronic and cachectic ailments. Upon examining thoſe complaints in the lower ſort of people, who live entirely on the farines and a groſs diet, I obſerved, they had a univerſal laſſitude, pains which they termed *rheumatic* flying through their body, and a breathleſſneſs upon uſing exerciſe. The legs were ſometimes ſwelled, and the *abdomen* almoſt always tenſe and tumified. But, whether they had ſwelling or not, they had generally an ill-coloured ſcorbutic complexion, and were liſtleſs and inactive to a great degree, with complaints of pains in their jaws, teeth, *&c.* I made no ſcruple to pronounce ſuch caſes ſcorbutic; and by proper antiſcorbutic regimen, medicines, diet, and exerciſe, ſeldom failed to give very ſenſible relief. I have diſobliged many patients, by ſaying they had the ſcurvy; a diſ-

eaſe

eaſe as hateful as it is unknown in this part of the world: but the relief they obtained from antiſcorbutics, ſoon convinced both them and myſelf, that their caſes were not miſtaken.

A letter from Dr. Linnæus, *giving an account of the ſcurvy in* Sweden *(c).*

* ** **** *****

D. D. JACOBO LIND

****** ********

S. p D.

CAR. LINNÆUS

Equ. aur.

ACcepi hiſce diebus * ** ****** a te miſſum librum cum epiſtola ******
****

ruſtici, fabri ferrarii, et qui e fodinis metalla eruunt, quique per longam hiemem cibis ſalitis, carnibus ſalſis, et imprimis halecibus ſalſis ſuſtentantur, eo laborant.

Mihi videtur morbus conſiſtere in ſola diſcraſia muriatica: et dum ſalſedo hæc muriatica inficit humores, nec expellitur; ſcorbutus oritur. Salſedine infectus ſanguis in patellam orichalci immiſſus mox eandem rodit. gingivas et dentes rodit ſaliva, quæ ſi in ignem exſpuatur magis crepitat; matula ab urina incruſtatur magis tartaro quam ab aliis, urinis; corrodit hæc vaſa lymphatica, et minimas fibras culloſas facit, homines ſic reddit tardos, in majori gradu pedes œdematoſos, et pectus aſthmate gravatum ab hydrope mediaſtini ſeu thoracis quo plerunque pereunt.

Signa apud nos ſunt hæc primaria: facies amittit lucem ſeu nitorem, ut triſtes quaſi conſpiciantur. Tardiores evadunt homines et adclivia adſcendentes fere ſuffocantur ob onus corporis; appetitus cibi languet; a cibo ſumpto torpor et ſomni deſiderium: evigilantes manê a ſomno magis laſſos ſe ſentiunt, quam dum veſperi cubitum ibant. Gingivæ laxæ pallidæ et fere œdematoſæ, maculæ interdum cæruleæ in femoribus, tibiis, niſi gingivæ ſint cruentæ. Qui, labori adſueti, deſiſtunt, citius hoc morbo opprimuntur. Qui, hauriunt ſpiritum frumenti, œdematoſi et hydropici evadunt. Qui inhabitant loca depreſſa, fœtida, maritima (cachectici) eo magis periclitantur.

Fabri

Fabri et metalli foſſores, qui quotidie ſudore diffluunt, ſudorem effundunt muriæ inſtar, ſalſum ſi digito abſtergus et guſtes, nec tamen ægrotant; ſi vero lædantur ut lectum chirurgi aliquando petant et quieſcant, dum conſolidatur vulnus interim ſcorbuto ſæpius ita inficiuntur ut vix evadant. Lappones, qui fere omnes ignorant ſalis uſum in cibo, a ſcorbuto immunes vivunt; honoratiores apud nos a ſalſis cavent, ne ſcorbuto corripiantur ſine motu viventes. Plebeii, qui œdemate pedum obnoxii ſunt a ſcorbuto, ſæpe tibiis exulcerantur ulcere cachœtico depaſcente, hinc miſerè vitam tranſigunt et vivunt; ſi vero adſtringentibus curantur pereunt aſthmate.

Cum radices adhuc minus profundas egit ſcorbutus, hauriunt noſtrates acidulas, quæ ſalſa reſolvunt, diluunt, et per urinam effundunt. *Cochlearia*, *naſturtium aq:*; *armoraciæ* infuſum frigide paratum, vulgatiſſima ſunt medicamenta. Succus *cochleariæ naſturtii aq.* &c. magnatibus vere propinatur. *Armoraciæ* radix raſa et cum aceti irrorata coch. ij. affunditur lactis cocti lib. i. ſs. caſeus aufertur, et ſerum hauritur quotidie a plebeis; ſæpius eventu feliciſſimo. Turiones *pini* cum *ſedo acri* coquuntur, addito momento aluminis, et hauritur ſtrenue; curat ſcorbuticos. Infuſum radicis Britannicæ hauritur quotidie, et epithemata in eodem decocto cachœticis pedibus imponuntur, quaſi unicum aſylum contra ulcera cachœtica ſcorbutica, a me introductum,

tum, quod didici a Coldeno veſtrate, et ille ab americanis ſylveſtribus. Hoc valet tantum contra ulcera cachœtica. *Armoraciæ* radicis ſyrupus frigide paratus divina eſt medicina in aſthmate ex hydrope thoracis ſcorbutico, niſi altiores fixerit radices, ut eradicari vix queat; pulvis aut electuarium e *maro vero* alternis vicibus propinatur.

Dum ann. 1739, 1740, 1741 medicus eram claſſis navalis Stockholmiæ infinitos hoc morbo decumbentes reſtitui.

Dabam Upſalii 1755, die 27 Feb.

P. S. Res medica apud nos nuper reviviſere cepit. Pauci itaque ſcripſere in rebus mediciis inter noſtrates. Linder, de *Rogfubben* ſeu ſcorbuto ante 20 annos edidit libellum, ſed non dignus eſt ut ad te mittatur.

An extract from the Natural Hiſtory of Norway, *by the right reverend* Erich Pontoppidan, *biſhop of* Bergen.

THough *Norway*, like *Sweden*, is in general a very healthful country, yet it is not exempted from its peculiar diſeaſes, eſpecially the inhabitants of the dioceſe of *Bergen* along the ſea ſide, and on the weſt ſide of *File-field* mountains. The air in theſe parts is not very ſalubrious, and differs very much from that of the eaſtern and ſouthern parts of *Norway*. For on the other ſide of that long chain of mountains, they have both in winter and ſummer a fine clear ſky, with as

as dry and healthful an air as in any part of *Europe*. Whereas in this province of *Bergen*, the air is generally damp, thick, and foggy; and though it cauſes milder winters, it is not ſo healthful as a thinner air. This appears by the effect it has on our peaſants, when they come here from other parts of the country; for they ſeem as if they were entirely out of their element, and can hardly breathe in it, nor does it agree with their health. This muſt be attributed to the great weſtern ocean that extends from *America* to *Norway*, from the ſurface of which a vaſt quantity of damps, or particles of water, are daily evaporated.

Among the diſeaſes which moſtly appear in the dioceſe of *Bergen*, which is the moſt unhealthful ſpot in all *Norway*, I ſhall firſt take notice of a kind of ſcab or itch. This is chiefly found among thoſe that live along the coaſt, occaſioned probably by eating great quantities of fat fiſh, and eſpecially the liver of the cod. This is properly a *ſcabies ſcorbutica*, which may be called a leproſy, but not ſo infectious as the oriental *lepra*; for married people live together many years, and the healthy is not infected, though the other party has it. But if they have children, they ſometimes take the infection, though not always. This diſtemper generally lies in the blood a long time before any eruption appears; at laſt it breaks out into ugly boils on the face: they are generally ſent to hoſpitals erected for

for that purpoſe, of which there is one at *Bergen*, and another at *Molde* in *Romſdalen*.

The ordinary ſcurvy would prevail in this country a great deal more, if it was not for hard work, which is the beſt preſervative againſt it, and keeps the juices in conſtant circulation. Hence thoſe who uſe but little exerciſe, and have a good appetite, ſeldom or never eſcape this diſtemper. Nature has ordained ſeveral berries and roots in this country which are excellent antiſcorbutics, eſpecially ſcurvy-graſs. Some eat this herb raw, others make a decoction of it with milk; and in *Nordland*, where it grows very ſtrong, and is called erichs-græs, they uſe it as a pickle in the winter.

In the eaſt country, or on the other ſide of *File-field*, they hardly know any think of theſe diſeaſes which are common along the coaſt. The air in thoſe parts, as has been obſerved before, is much purer, drier, and lighter, and as healthful as in any part of *Europe*. The long or deep vallies are like ventilators or channels, through which the wind as it were runs in a current from one end or the other, and keeps the air always freſh and in motion. The mountains or high grounds are remarkable for the ſalubrity of the air, for moſt people die of old age there, without ever having experienced what it is to be ſick.

A TREATISE OF THE SCURVY.

PART III.

CHAP. I.

Paſſages in ancient authors, ſuppoſed to refer to the ſcurvy; together with the firſt accounts of it.

THIS diſtemper, barbarouſly in the *Latin* denominated *ſcorbutus*, is ſaid to derive its appellation from *ſchorbeck* in the *Daniſh* language; or the old *Dutch* word *ſcorbeck*: both which ſignify a tearing or ulcers of the mouth. Moſt authors have deduced the term from the *Saxon* word *ſchorbok*, a griping or tearing of the belly; which is by no means ſo uſual a ſymptom of this diſeaſe; though, from a miſtake in the etymology of the name, it has been accounted ſo by theſe authors. The word ſeems to me moſt naturally to be made out from *ſcorb* in the

the *Sclavonic* language, which ſignifies a *diſeaſe*; this being the endemic evil in *Ruſſia*, and thoſe northern countries, from whence we borrowed the name *(a)*.

It is ſaid to have been known and deſcribed by the ancient writers in phyſic under other denominations; and particularly by *Hippocrates*, as the εἰλεὸς αἱματώδης, or third ſpecies of *volvulus (b)*. He ſays, thoſe who labour under that diſeaſe, have a fœtid breath, lax gums, and an hæmorrhage from the noſe; ulcers ſometimes on their legs, which heal up, while others break out anew. Their colour is black, their ſkin fine and thin; they are chearful, and prompt to action. He afterwards adds, that it required a tedious cure, was with difficulty removed, and often accompanied the patient to his death. *Langius* was of opinion, that this contained a deſcription of our modern ſcurvy. He imagined alſo the *lues venerea* to be nothing more than a complication of ſymptoms and diſeaſes which had been before deſcribed by the antients; to prove which he wrote two of his epiſtles *(c)*. *Foëſius*, *Dodonæus*, and ſome others, would here willingly ſupply a defect, by putting in the particle ὑ. This would indeed quite alter the ſenſe of *Hippocrates*, making the diſeaſe attended with an

(a) Vid. Hiſt. natural Ruſſiæ. Commerc. literar. Norimb. ann. 1733, *p.* 274.
(b) Lib. de intern. affectionibus. Edit. Foëſii, p. 557.
(c) Epiſt. 13. *et* 14.

averſion of all ſorts of exerciſe, more agreeable to the true genius of the ſcurvy.

But the moſt prevailing opinion is, that, in different parts of his writings, *Hippocrates* has deſcribed the ſcurvy under the name of Σπλῆν μέγας, *a ſwelling and obſtruction of the ſpleen.* After having told us *(d)*, that an hæmorrhage from the noſe, in people otherwiſe ſeemingly healthy, preſaged either a ſwelling of the ſpleen, pain in the head, or floating images before the eyes, he deſcribes thoſe with the ſwelling of their ſpleen, as having unſound gums, and a ſtinking breath. If theſe ſymptoms did not appear, they then had ulcers on the *tibia*, and black *cicatrices.* After mentioning ſome ſymptoms which give reaſon to expect an eruption of blood from the noſe, he adds another diagnoſtic, *viz.* a ſwelling under the eye-lids; to which if there be joined a ſwelling of the feet, they would ſeem to labour under a dropſy. He treats of this diſeaſe in another place *(e)*; where he takes no notice of the gums being affected, but only of the breath being offenſive; the patient's loſing colour, being lean, and having bad ulcers The ſpleen felt hard, and always of an equal bigneſs, in thoſe of a bilious habit; but in a pituitous conſtitution, it was ſometimes bigger, and ſometimes leſs. Several received ſmall benefit from medicine, by which the ſwelling of their ſpleen was

(d) Prorrhetic. lib. 2. p. 111.
(e) Lib. de affectionibus, p. 521.

uſually

uſually but little abated: and the diſeaſe not yielding to any remedies, ſome in progreſs of time fell into dropſies; but in others the hardneſs and ſwelling continued to old age. If it ſuppurated, they were cured by burning the part. He is elſewhere *(f)* ſtill more particular in his deſcription of that diſeaſe. In thoſe who labour under it, the belly is firſt ſwelled, then the ſpleen is enlarged, and feels hard, with acute pain. They loſe their colour; become black, or pale, of the hue of a pomegranate rind; emit a diſagreeable ſmell from their ears and gums (the latter of which ſeparate from the teeth); have ulcers on the *tibia*, extenuated limbs, and a coſtive belly. He attributes thoſe ſwellings *(g)* to the drinking of ſtagnating, raw, and unwholſome waters; where he deſcribes the *lienoſi* as thin, meagre, and extenuated by the diſeaſe.

The reader will hereby be enabled to judge, or better by conſulting the original itſelf, how far *Hippocrates* has deſcribed the modern ſcurvy under the appellation of *a ſwelling of the ſpleen*. It appears by ſeveral paſſages in his works, that he imagined the yellow jaundice owing to an obſtruction of the liver, and the black to that of the ſpleen, eſpecially to a *ſcirrhus* of it. An obſtruction or hardneſs of that *viſcus*, as well as ſome parts contiguous to it, which he might eaſily miſtake for it, often occurs in practice; and is owing

(f) Lib. de intern. affectionibus, p. 549.
(g) Lib. de aëre, aquis, et locis, p. 283.

chiefly to ſuch cauſes as he aſſigns *(h)*, *viz.* ill-conditioned fevers, particularly of the intermittent kind; and, as he juſtly adds, is a diſeaſe not in itſelf mortal, though of tedious cure *(i)*. But diſſections have ſufficiently proved, that in the ſcurvy the ſpleen is but ſeldom affected, or at leaſt is not the cauſe or ſeat of the diſeaſe. Dr. *Mead* gives us an inſtance *(k)* of a preternatural ſwelling of the ſpleen found after death in a countryman of the iſland of *Sheppey*, who had ſcorbutic ſymptoms. But it is to be remarked, the patient laboured under a complicated diſeaſe, eſpecially a violent intermitting fever, which is often attended with obſtructed *viſcera*. That this diſeaſe was not known or deſcribed by *Hippocrates*, farther appears from his making no mention of ſpots, an uſual ſymptom in the ſcurvy, nor of many others which almoſt conſtantly attend it. Upon the whole, we may be perſuaded, that had this divine author ſeen the diſtemper, he, who ſtudied nature with ſo much care, and copied her with ſo great exactneſs, would have left us a more accurate deſcription of it. But the truth is, the warm ſouthern climate in which he lived, was not then, nor is at this day, pro-

(h) Lib. de intern. affection. p. 521.

(i) This diſtemper is obſerved by my ingenious friend Mr. *Cleghorn* to be one of thoſe to which the inhabitants of *Minorca* are ſubject, from their ſcarcity of well-water, and the frequency of tertian fevers in that iſland. *Obſervations on the epidemic diſeaſes of Minorca, Introduction, p.* 67.

(k) Monit. et. præcept. medic. cap. 16. *de ſcorbuto.*

ductive

ductive of it: and the nature of the coaſting voyages of the ancients gave him no opportunity of being acquainted with it at ſea. So that there ſeems no occaſion for paying him a compliment here; as it is not to be expected he ſhould have hinted at, much leſs have deſcribed a diſeaſe, which in all probability he never ſaw nor heard of.

The ſucceeding *Greek* and *Roman* authors, are likewiſe upon this diſeaſe entirely ſilent. They copy from *Hippocrates* pretty nearly the account they give of the *lienoſi*; without adding any one ſymptom which would induce us to believe, that either he meant, or they underſtood it to be the ſcurvy *(l)*.

It alſo ſeems to have been a diſeaſe altogether unknown to the *Arabian* writers. They have made no mention of ſuch a diſtemper in any part of their works; though *Avicenna (m)*, the moſt conſiderable amongſt them, has deſcribed the ſpleen-malady at great

(l) Celſus, in his elegant manner, almoſt literally tranſlates *Hippocrates*.

Quibus ſæpe ex naribus fluit ſanguis, his aut lien tumet, aut capitis dolores ſunt: quos ſequitur, ut quædam ante oculos tanquam imagines obverſentur. At quibus magni ſunt lienes, his gingivæ malæ ſunt, et os olet, aut ſanguis aliquâ parte prorumpit. Quorum ſi nihil evenit, neceſſe eſt in cruribus mala ulcera, et ex his nigræ cicatrices fiant. Lib. 2. cap. 7.

Ætius, tetrab. 3. ſerm. 3.

Paulus Ægineta, lib. 3. cap. 49.

Aretæus de cauſis et ſignis morborum, lib. 1. cap. 14.

Cæl. Aurelian. chronic. ſive tardar. paſſion. lib. 3. cap. 4.

(m) Can. 3. fen. 15. tract. 2. cap. 5. de ſignis apoſtematum ſplenis.

length, with the ſame ſymptoms as done by the *Greeks*.

Some who are extremely fond of attributing much to the knowledge of the ſage ancients, would have it to be the ſame with the *oſcedo* deſcribed by *Marcellus (n)*. Dr. *Poupart* thought the malignant ſcurvy obſerved at *Paris*, had a reſemblance to the *Athenian* plague, as deſcribed by *Lucretius (o)*. *Moellenbroek* imagined the ſervant of the centurian at *Capernaum (p)* to have had this diſtemper. But ſuch opinions deſerve no ſerious confutation.

It has, laſtly, and with greater ſhew of reaſon, been eſteemed the ſame malady which afflicted the *Roman* army under the command of *Cæſar Germanicus*. In order to judge of which, it may be proper to tranſcribe the narration as it is in *Pliny (q)*.

" The *Roman* army under the command " of *Cæſar Germanicus* having incamped in " *Germany*, beyond the *Rhine*, near the ſea- " coaſt, they met with a fountain of ſweet " water; by the drinking of which, in the " ſpace of two years, the teeth dropt out, and " the joints of the knees became paralytic *(r)*. " The phyſicians called the malady *ſtomacace* " and *ſceletyrbe*. They diſcovered a remedy " againſt it, *viz. herba Britannica*, a ſalu-

(n) *Lib. de medicamentis, cap.* 2.
(o) *Lib.* 6. *Vid. Thucydid.*
(p) See *Matth.* viii. 5.
(q) *Hiſtor. natural. lib.* 25. *cap.* 3.
(r) *Compages in genubus ſolverentur.*

" tary medicine not only in diſorders of the " mouth and nerves, but for the quinſey, " bite of ſerpents," *&c.*

The whole ſeems pretty extraordinary. And I cannot help remarking, that the loſs of their teeth, and the uſe of their limbs, in two years after drinking this water; the extraordinary virtues aſcribed to *herba Britannica*; and the romantic directions afterwards added of gathering it before thunder, ſavour much of the fabulous credulity for which this author is ſo juſtly blamed. But had a more credible hiſtorian given us this relation, it would ſtill ſeem exceptionable, upon many accounts, as referring to the ſcurvy.

Thoſe places beyond the *Rhine*, *viz.* the northern parts of the *Netherlands*, are now well known, and no ſuch fountain has ever been diſcovered. No mention is made of ſcorbutic ſpots, which are more frequently obſerved than what has been here interpreted the *ſceletyrbe*. This is ſuppoſed to refer to the rigid tendons in the ham. But his delineation by no means ſeems to expreſs this peculiar ſymptom in the ſcurvy. It is underſtood by *Galen (s)*, the only author who uſes the appellation, to mean a ſpecies of palſy very different from the ſcorbutic contraction.

Strabo (t) mentions a like malady occa-

(s) *In definition. medic. p.* 265. *tom.* 2. *Ed. Charterii.*

(t) Στομακάκκη τε καὶ σκελοτύρβη πειραζομένης τῆς γρατιᾶς ἐπιχωρίοις παάθισι, τῶν μὲν περὶ τὸ στόμα, τῶν δὲ περὶ τὰ σκέλη παραλυσίν τινα δηλεντων, ἔκ τε τῶν ὑδρείων, καὶ τῶν βοτανῶν. Strabon. geograph. lib. 16. ſub finem.

ſioned by the uſe of certain fruits, &c. to have afflicted the army under the command of *Ælius Gallus* in *Arabia*. But *ſtomacace* may juſtly be underſtood to mean various other diſorders of the mouth (aphthous, and other kinds) without ſuppoſing it to be the ſcurvy; as this calamity, when general in an army, occaſioning the *ſceletyrbe*, or depriving the ſoldiers of the uſe of their limbs, muſt needs have been attended with other concomitant ſymptoms, equally conſtant and remarkable in the diſeaſe *(u)*. Theſe would no doubt have been particularly deſcribed by the ſucceeding writers in phyſic, who had opportunity of ſeeing both *Pliny*'s and *Strabo*'s writings.

There would have been no occaſion to have dwelt ſo long upon this inquiry (as it may appear a matter of no great importance, to be rightly informed whether this diſeaſe was known to the ancients or not) if a miſplaced eſteem for their works had not been productive of ill conſequences in practice, and in the cure of this diſeaſe. Many, believing the ſpleen the ſeat of it, have adapted their medicinal intentions to the relief of that bowel;

(u) Not that I would be underſtood to mean, that the ſcurvy never afflicted armies of old; but only that the accounts we have of it are dubious and imperfect. The firſt deſcription of a true ſcurvy that I have met with, is what occurred in the Chriſtian army in *Ægypt*, about the year 1260, under *Lewis* IX. But there mention is made, not only of the legs being affected, but alſo of the ſpots. The fungous and putrid gums are particularly deſcribed, &c. *Vid. Hiſtoire de Lewis* IX. *par le Sieur Joinville.*

while

while others have wrote whole volumes to diſcover the true *herba Britannica*, endued with ſuch ſuppoſed miraculous virtues.

But as people are apt to run from one extreme to another, many not finding the diſeaſe in any deſcription of the ancients, have ſuppoſed it a new calamity, making its appearance in the world, like the *lues venerea*, at a certain period of time *(w)*; an opinion equally, if not more cenſurable than the former. For as there ſeems to have been two reaſons principally why it is ſo imperfectly, if at all, deſcribed by the antients, *viz.* their little knowledge of the northern countries, where it is peculiarly endemic, and their ſhort coaſting-voyages; ſo we find, that as ſoon as arts and ſciences began to be cultivated among thoſe northern nations (about the beginning of the ſixteenth century, a period remarkable for the advancement of learning over all *Europe)* this diſeaſe is mentioned by their hiſtorians and other authors. We could not have expected it ſooner from their phyſicians, if we reflect upon their extreme ignorance, and the little eſteem this ſcience was held in by them *(x)*. But when, after the taking of *Conſtantinople*, the *Greek* writings were diſperſed over the weſtern parts of the world, and in the beginning of the next century were made general and public

(w) Vid. *Freind*'s Hiſtory of phyſic.

(x) Vid. Olaum Magnum de medicina et medi is ſeptentrionalibus.

by

by the late invention of printing, the art of phyſic began to flouriſh in the northern parts of *Europe*; and we ſoon after find this diſeaſe accurately deſcribed there by phyſicians.

In like manner, no ſooner were long voyages performed to diſtant parts of the world, by the great improvement of navigation, and by the diſcovery of the *Indies*, which happened much about the ſame period of time, than the ſeamen were afflicted with it; as appears by the voyage of *Vaſco de Gama*, who firſt found out a paſſage by the Cape of *Good Hope* to the *Eaſt-Indies*, in the year 1497; above a hundred of his men, out of the number of a hundred and ſixty, dying in this diſtemper. In the relation of which voyage, the firſt account of this diſeaſe at ſea is to be met with *(y)*. At that time, and for a conſiderable time afterwards, it was a diſeaſe little known; as appears by the following narration.

The ſecond voyage of James Cartier *to* Newfoundland, *by the grand bay up the river of* Canada, ann. 1535 *(z)*.

" In the month of *December*, we under-
" ſtood that the peſtilence was come upon
" the people of *Stadacona*; and in ſuch ſort,
" that before we knew of it, above fifty of

(y) See the hiſtory of the *Portugueſe* diſcoveries, &c. by *Hermen Lopes de Caſtanneda*.

(z) *Hakluit*'s collection of voyages, vol. 3. p. 225.

" them

" them died. Whereupon we charged them
" neither to come near our forts, nor about
" our ſhips. Notwithſtanding which, the
" ſaid unknown ſickneſs began to ſpread it-
" ſelf amongſt us, after the ſtrangeſt ſort
" that ever was either heard of or ſeen; in-
" ſomuch that ſome did loſe all their ſtrength,
" and could not ſtand upon their feet;
" then did their legs ſwell, their ſinews
" ſhrunk, and became as black as a coal.
" Others had alſo their ſkin ſpotted with
" ſpots of blood, of a purple colour. It
" aſcended up their ancles, knees, thighs,
" ſhoulders, arms, and neck. Their mouth
" became ſtinking; their gums ſo rotten,
" that all the fleſh came away, even to the
" roots of their teeth; which laſt did alſo al-
" moſt all fall out. This infection ſpread ſo
" about the middle of *February*, that of a
" hundred and ten people, there were not
" ten whole: ſo that one could not help the
" other; a moſt horrible and pitiful caſe!
" Eight were already dead; and more than
" fifty ſick, ſeemingly paſt all hopes of re-
" covery. This malady being unknown to
" us, the body of one of our men was open-
" ed *(a)*, to ſee if by any means poſſible the
" occaſion of it might be diſcovered, and the
" reſt of us preſerved. But in ſuch ſort did
" the calamity increaſe, that there were not
" now above three ſound men left. Twenty-
" five of our beſt men died; and all the reſt

(a) See the diſſection, Part 2. chap. 7. N° 2.

" were

" were ſo ill, that we thought they would " never recover again: when it pleaſed God " to caſt his pitiful eye upon us, and ſend us " the knowledge of a remedy for our health " and recovery.

" Our Captain conſidering the deplorable " condition of his people, one day went out " of the fort, and walking upon the ice, he " ſaw a troop of people coming from *Sta-* " *dacona*. Among thoſe was *Domagaia*, " who not above ten or twelve days before " laboured under this diſeaſe; having his " knees ſwelled as big as a child's head of " two years old, his ſinews ſhrunk, his teeth " ſpoiled, and his gums rotten and ſtinking. " The Captain, upon ſeeing him now whole " and ſound, was thereat marvellous glad, " hoping to know of him how he had cured " himſelf. He acquainted him, that he had " taken the juice of the leaves of a certain " tree, a ſingular remedy in this diſeaſe. The " tree in their language is called *ameda*, or " *hanneda (b)*; by a decoction of the bark " and leaves of which, they were all per- " fectly recovered in a ſhort time."

Of the colony ſent over from *France*, under the Lord of *Roberval*, there died in the winter fifty in this diſeaſe *(c)*. We have ſome time afterwards the following farther account of it.

(b) See Part 2. chap. 4. p. 178.
(c) *Ann.* 1542. See *Hakluit*, vol. 3. p. 240.

Nova

Nova Francia; *or, A deſcription of that part of* New France *which is one continent with* Virginia; *in three late voyages and plantations, made by Meſſieurs* de Monts, du Pontgrave, *and* de Poutrincourt *(d), publiſhed by* L'Eſcabot, ann. 1604.

" Briefly, the unknown ſickneſſes like to " thoſe deſcribed by *James Cartier*, aſſailed " us. As to remedies, there were none to " be found. In the mean while, the poor " creatures did languiſh, pining away by lit- " tle for want of meats to ſuſtain the ſto- " mach; which could not receive hard food, " by reaſon of a rotten fleſh which grew and " over-abounded within their mouths; and " when one thought to root it out, it grew " again in one night's ſpace, more abundant- " ly than before. As to the tree called *ameda*, " mentioned by the ſaid *Cartier*, the ſavages " of theſe lands know it not *(e)*. It was " moſt pitiful to behold every one (very few " excepted) in this great miſery, and the " miſerable wretches dying, as it were, full " of life, without any poſſibility of being ſuc- " coured. Thirty-ſix died; and thirty-ſix " or forty more ſtricken with it, recovered " themſelves by the help of the ſpring, ſo " ſoon as that comfortable ſeaſon appeared.

(d) Collection of voyages and travels, compiled from the library of the late Lord *Oxford*, vol. 3. p. 808.

(e) The *Indian* nation at *Stadacona* by this time had been cut off.

" The

" The deadly ſeaſon is the end of *January*, " the months of *February* and *March*; " wherein the ſick die moſt commonly, " every one in his turn, according to the time " they begin to be ill; in ſuch ſort, that he " who is taken ill in *February* and *March*, " may eſcape; but thoſe who betake themſelves to bed in *December* and *January*, are " in danger of dying in *February*, *March*, or " the beginning of *April*. Which time being paſt, there are hopes and aſſurances of " ſafety. Monſ. *de Monts* being returned into " *France*, conſulted the Doctors of phyſic " upon this ſickneſs; which, in my opinion, " they found very new, and altogether unknown to them; for I do not find, that " when we went away, our apothecary was " charged with any order or directions for " the cure thereof."

The author afterwards obſerves it to be the ſcurvy, a malady to which the northern nations, the *Dutch*, *&c.* are very ſubject; and upon this occaſion, quoting a paſſage from *Olaus Magnus*, ſays, " I have delighted myſelf to recite the words of this author, becauſe he ſpeaketh thereof as being ſkilled, " and has well deſcribed the land diſeaſe of " *New France*; only he maketh no mention " of the ſtiffneſs of the hams, nor of the " ſuperfluous fleſh which groweth in the " mouth." He further obſerves, that the ſavages uſe frequent ſweatings for cure of this malady; and that a ſingular preſervative againſt it

it is content, or mirth, and a chearful humour; as it commonly attacked the diſcontented, idle, and repining. But the laſt and moſt ſovereign remedy, was the *ameda* mentioned by *Cartier*, which he calls the *tree of life*. This Monſieur *Champlein*, who was then up the country, had orders to ſearch for among the *Indians*, and to make proviſion of it for the preſervation of their colony.

The name of the diſeaſe is ſaid to be in the hiſtory of *Saxony*, written by *Albert Krantz*; and if ſo, I believe he will be found the firſt author now extant who calls it the ſcurvy *(f)*. It is next taken notice of by *Euritius Cordus*, in his *Botanologicon*, publiſhed *ann.* 1534. It is obſerved by one of the ſpeakers in that dialogue, that the herb *chelidonium minus* is called by the *Saxons ſchorbock rout*, being an excellent remedy for that diſeaſe. Being aſked, what diſeaſe this is? it is replied, It would ſeem to be the *ſtomacace* of *Pliny*; as it occaſions the teeth to drop out, and all the mouth is affected by it. In the year 1539, it is mentioned in the ſame manner by *Jo. Agricola*, in his *Medicina herbaria*. *Olaus Magnus*, in his hiſtory of the northern na-

(f) He brings down his hiſtory to the year 1501. According to *Melchior Adams*, and *Chevreau* in his hiſtory of the world, he died *ann.* 1517. I own I could not find it in the edition which I peruſed: but it is ſaid ſo by *Wierus*, *Schenkius* in his obſervations, and others; unleſs they have miſtaken him (which could not be *Wierus*'s caſe) for *Geo. Fabritius*, an author who flouriſhed about the year 1570, and mentions, in his *Annales urbis Miſnæ*, a diſeaſe breaking out in the year 1486, *viz.* the ſcurvy; which he very imperfectly deſcribes.

tions,

tions, publiſhed *ann.* 1555, obſerving what diſeaſes are peculiar to them, gives us a long deſcription of the ſcurvy *(g)*.

Soon after we find three eminent phyſicians, all cotemporary, treating expreſsly of this diſtemper, *viz. Ronſſeus*, *Echthius*, and *Wierus*. To whom *Langius* may be added as a fourth, having wrote two epiſtles upon this ſubject. What is called *Echthius*'s *Epitome*, was the firſt wrote, though the laſt publiſhed. It would appear from *Forreſtus (h)*, to be a letter ſent, in the year 1541, to *Blienburchius*, a phyſician at *Utrecht*; whoſe anſwer is now loſt. The firſt book publiſhed expreſsly upon the ſcurvy was by *Ronſſeus*, in the form of an epiſtle. The year is uncertain, as he afterwards corrected, and reprinted

(g) Eſt et alius morbus caſtrenſis, qui vexat obſeſſos et incluſos, talis, viz. ut membra carnoſa, ſtupiditate quadam denſata, et ſubcutaneo tabo, quaſi cera liqueſcens, digitorum impreſſioni cedant; denteſque, veluti caſuros, ſtupefacit; colores cutium candidos reddit cæruleos, torporemque inducit, cum medicinarum capiendarum nauſea; vocaturque vulgari gentis lingua ſchoerbuck; *Græcè*, cachexia, *forſitan à ſubcutanea mollitie putreſcente: quæ videtur eſu ſalſorum ciborum, nec digeſtorum, naſci, et frigidâ murorum exhalatione foveri. Sed vim tantam non habebit, ubi muri interiùs tabulis quorumcunque lignorum ſunt cooperti. Inſuper, ſi diutiùs graſſetur iſte morbus, abſinthiaco potu continuato illum arcere ſolent.* Lib. 16. cap. 51. *Viribus, primis annis, demum (milite ſtragibus continuis diminuto) artibus, dolis, et inſidiis, obſidentium ſurripiunt commeatum, præſertim pecudes; quas ſecum abductas, in herboſis domorum tectis paſcendas imponunt; ne, defectu carnium recentiorum, morbum incurrant, quibuſvis ægritudinibus triſtiorem, patriâ linguâ* ſchorbuk *nuncupatum; hoc eſt, ſaucium ſtomachum, diris cruciatibus et diuturno dolore tabefactum. Frigidi enim et indigeſti cibi avidiùs ſumpti, morbum hujuſmodi cauſare videntur, qualem medici* cachexiam univerſalem *appellant.* Lib. 9. cap. 38.

(h) Obſerv. medic. lib. 20. *obſ.* 11.

it

it in a different form. He is ſo modeſt as to ſay, that had he firſt ſeen *Wierus*'s accurate obſervations, he would not have publiſhed any thing upon the ſubject. There is an edition of *Ronſſeus* put down by *Mercklin (i)* and *Lipenius (k)*, in the year 1564; and of *Wierus*'s obſervations in 1567. The learned Dr. *Aſtruc (l)* is of opinion, that theſe laſt were not publiſhed till 1580. It is thus far certain, that thoſe authors correſponded together; and upon *Wierus* ſending to *Ronſſeus* *Echthius*'s letter, now called his *Epitome*, he publiſhed it, together with his own work, *Wierus*'s obſervations, and two of *Languis*'s epiſtles, in the year 1583.

CHAP. II.

Bibliotheca ſcorbutica: or, *A chronological view of what has hitherto been publiſhed on the ſcurvy.*

A. D. 1541. *Joan. Echthii de ſcorbuto, vel ſcorbutica paſſione, epitome.*

He propoſes it as a queſtion, Whether the blood here may not be corrupted, without the ſpleen or any other of the *viſcera* being affected? but is inclined to think the ſpleen often is. He aſſigns as cauſes of this diſeaſe, groſs unwholſome food, of ſalt, dried, or pu-

(i) *Linden. renovat.*
(k) *Bibliotheca real. medic.*
(l) *Lib. de morbis venereis.*

trid fleſh and fiſh, pork, ſpoiled bread, ſtinking water, &c. He diſtinguiſhes the ſymptoms into two claſſes. The firſt contains ſuch as appear at the beginning, and are common to it with other diſeaſes; the ſecond, the ſucceeding and more certain ſigns of the malady. Under the firſt, he comprehends a heavineſs of the body, with a ſpontaneous laſſitude, generally moſt ſenſibly felt after exerciſe; a tightneſs of the breaſt, and a weakneſs of the legs; an itching, redneſs, and pain of the gums; a change of colour in the face to a darkiſh hue: and obſerves, that where all theſe concur, we may fortel an approaching ſcurvy.

But the more immediate and certain ſigns he enumerates under the ſecond claſs, *viz.* a fœtid breath, a ſpungy ſwelling of the gums, which are apt to bleed, with a looſening of the teeth; an eruption of leaden-coloured, purple, or livid ſpots, on the legs; or of ſomewhat broader ſpeckled or dark-coloured *maculæ*, ſometimes on the face, at other times on the legs. As the diſeaſe advances, the patients loſe the uſe of their legs, and are ſubject to a difficulty of breathing, particularly when moved, or when they ſit erect; at which times they are apt to faint: but upon being laid down again, they recover, and breathe freely; nay, when lying, they affirm that nothing ails them. But as they cannot always thus continue without ſome motion, they are ſubject to theſe perpetual ſwoons. The appetite is ſeldom bad; on the contrary, they gene-

generally have a good one. There is ſometimes obſerved an aggravation of the ſymptoms; with ſome on the fourth or fifth day, in others on the third. Some few have it every day, but without any fever: others become feveriſh. Preceding fevers may terminate critically, as it were, in the ſcurvy: and with ſuch ſcurvies whole families and monaſteries are together infected; which generally end either in a deadly dyſentery, or, at other times, in a ſudden and mortal *ſyncope*. During the courſe of this diſeaſe, ſome are apt to be very coſtive; while others have a continual *diarrhœa*. Sometimes their ſpotted legs ſwell ſo monſtrouſly, as to reſemble the *elephantiaſis* of the *Arabians*; while others have them ſo extenuated, that the bones ſeem only covered with ſkin. The ſpots of ſome ſeparate into black and duſkiſh ſcales, like the *morphœa* and leproſy of the *Greeks*; while in others they remain ſoft, ſmooth, and ſhining; and the impreſſion of the finger continues for ſome time upon the part. In thoſe who die, the ſpots ſometimes diſappear; at other times, they break out afreſh. Laſtly, There have been obſerved varicoſe ſwellings of the veins, as in thoſe under the tongue, and of the lower lip.

He afterwards delivers the indications of cure, without giving us any remedies. And it may not be amiſs to remark, that this is the firſt deſcription now extant of the ſcurvy by a phyſician.

1560. *Jo. Langii medicinalium epiſtolar. miſcellan. lib.* 3. *epiſt.* 13. *de novis morbis; epiſt.* 14. *de veterum ſtomacacia et ſceletyrbe, et morbi Gallici tuberibus.*

Theſe two epiſtles were reprinted by *Ronſſeus*, as ſerving to prove the ſcurvy to have been a diſeaſe known to the ancients.

1564. *Balduini Ronſſei de magnis Hippocratis lienibus, Pliniiquæ ſtomacace ac ſceletyrbe, ſeu vulgò dicto* ſcorbuto, *commentarius. Ejuſdem epiſtolæ quinque ejuſdem argumenti.*

He aſcribes the frequency of the ſcurvy in *Holland*, to their diet and air; to their eating great quantities of water-fowl; but principally to their living on fleſh, firſt ſalted, then ſmoked and dried. The weather, he ſays, had a very great influence upon this diſtemper. For though it was met with in the country at all ſeaſons; yet, by long obſervation and experience, he had found, that a moiſt air, and ſoutherly winds, contributed greatly to increaſe it: and inſtances in the year 1556, when, during that whole year, they had almoſt continual rains, with ſoutherly and weſterly winds; which were followed by a great frequency of this diſeaſe; and to ſuch a height, that many were brought in danger of their lives by it. In 1562, after a very rainy ſeaſon, there likewiſe enſued frequent and very troubleſome ſcurvies. So that although this malady was at all times endemic with them, from the peculiar air of the country, and their bad

bad waters; yet, upon very ſlight occaſions, it often became more general or epidemical during a moiſt ſeaſon. It uſually prevailed moſt in ſpring and autumn; was milder in the ſpring, and ſhorter: but in the autumn, it was of longer continuance, and more obſtinate, ſo as ſometimes to endanger the life of the patient. No age was exempted from its attack; which, though ſevereſt with old people, yet was more incident to thoſe of a middle age.

From a miſtaken theory in judging it a diſeaſe of the ſpleen, he begins the cure by bleeding. He afterwards preſcribes an aperient and attenuating decoction of a number of antiſcorbutics, with the addition of *ſenna*, and ſome other purgative ingredients: but obſerving, that the more ſimple compoſitions were generally the moſt efficacious, he thinks, that the uſe of ſcurvy-graſs, wormwood, and germander, is alone ſufficient; the vulgar curing themſelves by ſcurvy-graſs, brooklime, and water-creſſes. At the end of the cure, he gives gentle phyſic; forbidding all violent and acrid medicines, eſpecially draſtic purgatives; till towards the decline of the malady, when the patient is able to bear them. For twelve years paſt, he had uſed with great ſucceſs, both for prevention and cure, a tincture, in ſpirit of wine, of *fumaria*, *cochlearia*, *abſinthium*, and *chamædrys*, or herbs of the like virtue. The ſpirit was extremely well ſaturated by repeated infuſions of the freſh plants,

and the belly kept moderately open during the courſe.

As to diet, upon which much depends, he orders it ſhould be inciding and attenuating. They muſt abſtain from all kind of ſea and water fowls; from pork, and ſalt meats. Their drink ſhould be wormwood and germander wine by turns. He preſcribes a gargariſm with alum and honey for the mouth; and orders the rigid tendons in the ham, after friction, to be anointed with cowfeet jelly. He has ſeveral remedies for the ulcers on the legs. To prevent the diſeaſe, he recommends gentle phyſic in the autumn; but eſpecially the uſe of a light wormwood ale or wine: by which (with the help of a diet of eaſy digeſtion, the benefit of good air, and dry lodgings) he has known it often not only prevented, but cured.

In his firſt epiſtle, he accounts for the frequency of this diſtemper in ſome places more than in others; from their different ſoils, climates, and weather, and eſpecially from the quality of the waters they uſed: and obſerves, that, univerſally, in marſhy and boggy countries, people were moſt afflicted with the ſcurvy; though their diet and other circumſtances were alike with others. In his ſecond epiſtle, he maintains, that this diſtemper was known to the ancients, againſt the opinion of *Wierus*; and remarks, that ſeamen in long voyages cure themſelves of it by the uſe of oranges.

oranges. In his third epiſtle, he recommends the ſteel and mineral waters.

1567. *Jo. Wieri medicarum obſervationum hactenus incognitarum lib.* 1. *de ſcorbuto.*

He tranſcribes all the ſymptoms out of *Echthius* at great length, with the following additions. The weakneſs in the legs felt upon the approach of the diſeaſe, is attended with a ſtiffneſs there, and a ſmall pain. The fleſh of the gums is often deſtroyed to the roots of the teeth. Smaller ſpots, reſembling blood ſprinkled upon the part (or flea-bites, but larger) appear on the legs, thighs, and on the whole body; but the very large, livid, and purple ſpots, chiefly on the legs. Sometimes this livid colour will ſhew itſelf in the *fauces* of thoſe who are near death. In the progreſs of the diſeaſe, the tendons of the legs become ſtiff and contracted. Some are ſeized with a ſlow erratic fever. After ardent malignant fevers, and double tertians, ill cured, he has known the ſcurvy to follow; upon which a malignant quartan has enſued. This ſtill left the ſcurvy behind it; which was at laſt cured by the proper method. When the legs are greatly ſwelled, they are ſometimes altogether of a livid colour. The pulſe, as in a quartan fever, varies: ſo that at different times, and according to the ſtate of the diſeaſe, it is ſmall, hard, quick, and weak. The urine is reddiſh, turbid, thick, and fæculent, like new red wine, reſembling that which is

uſual in the fit of a quartan when ſweating; and of a bad ſmell. He adds afterwards, in his prognoſtics, that if ulcers break out on the *tibia*, they are with great difficulty healed up; being extremely fœtid, of a gangrenous diſpoſition, and ſo putrid, as not to feel the application of a hot iron.

He aſſigns as cauſes of this diſtemper, unwholſome air, ſuch bad and corrupt food as was uſed in the northern countries, and by their ſhipping, *viz.* ſtinking pork, ſmoked rancid bacon, mouldy bread, thick fæculent ale, bad water, melancholy and grief of mind, preceding fevers, the ſtoppage of uſual evacuations, *&c.*

Though he ſometimes bleeds in the beginning, yet he forbids it when the diſeaſe is advanced. In this caſe, after evacuating the *primæ viæ* by a lenient ptiſan of *ſenna*, or the like (obſerving that it does not bear violent purgatives) the patient is to be ſweated twice a-day, *viz.* in the morning, and at four after noon, with a draught of four ounces of the expreſſed juices of the antiſcorbutic herbs; which are, *cochlearia*, *naſturtium aq.* *et naſturtium hyber.* of each equal parts, with but half the quantity of *becabunga*; adding a little cinnamon and ſugar. The proportion of the different ingredients may be diminiſhed or increaſed, according to the conſtitution of the patient, ſtate of the diſeaſe, and heat of the body. He would have the herbs always freſh and green when uſed; and they may ſometimes be boiled

boiled in goats or cows milk, or rather in whey: but their expreſſed juice mixed with whey, is preferable to their decoction. He ſometimes adds *abſinth. vulgare, fumaria, chamædrys*, and, in certain caſes, *nummularia*. To people who are fond of a *farrago* of medicines, he gives a long liſt of all the antiſcorbutic and aperient herbs, roots, ſeeds, *&c.* to which later authors have made but a ſmall addition; and remarks, that he generally made ſucceſsful cures by a proper uſe of a few of theſe plants. The following remedy he underſtood had cured many. ℞ *abſinth. vulg. ſicc. bacc, juniper. contuſ. ana manip.* i. *lact. caprin. lib.* iv. *Coq. ad tertiæ partis conſumptionem.* A dram of ſaffron is to be infuſed in the ſtrained decoction, and a warm draught taken three times a-day. After giving ſome other cures uſual in his time for this diſtemper, he obſerves, that there is nothing ſpecific in the common antiſcorbutic herbs, as they are called; but that all acrid plants which incide and attenuate, as alſo many aperient roots, and warm ſeeds, are highly ſerviceable. At the ſame time, a diet of eaſy digeſtion, and ſimilar intention, muſt be uſed, with good ſound ale or wine with wormwood infuſed, or milk and whey. Care muſt be taken to procure dry chearful lodgings, and to baniſh grief, cares, *&c.*

He afterwards ſubjoins various topical applications for the different ſymptoms. For the putrid gums, ℞ *ſal. mar. alum. ana dr.* ii.

aq.

aq. font. lib. i. *M. Bulliant ſimul.* The people of *Frieſland* uſe the following. ℞ *acet. ceresiv. lib.* ii. *bol. armen. unc.* ſs. *alumin. dr.* ii. *mellis unc.* iii. *M. Bulliant ſimul.* The *Saxons* add to the former, *herba ſabina.* If the putrefaction is very great, *ung. Ægyptiac.* or *alum. uſt.* mixed with honey, may be uſed; or it is to be ſtopped by touching with *ol. vitriol.* In his appendix, he particularly recommends whey for the cure of this diſeaſe; and gives a deſcription, at great length, of the *cochlearia*, and ſome other antiſcorbutic herbs.

1581. *Remberti Dodonæi praxeos medic. lib.* 2. *cap.* 62. *Ejuſdem medicinalium obſervationum exempl. rar. cap.* 33. *de ſcorbuto.*

He aſcribes the ſcurvy chiefly to bad diet. He relates, that it was occaſioned in *Brabant*, *ann.* 1556, by the uſe of ſome corrupted rye brought from *Pruſſia* during a ſcarcity of corn. At this time many had not the ſpots; but their gums were chiefly affected. He gives an inſtance, however, of its being contracted in a priſon, where confinement alone was the occaſion; the place being well aired, and the diet ſuch as he thought could give no ſuſpicion of its proceeding from thence. He never bled any patient in this diſeaſe, but the perſon in the priſon, who had ſigns of a *plethora.* He generally performed a cure by the uſe of a few herbs, *viz. naſturt. hortenſ. et aquatic.. cochlearia*, and *becabunga*; which laſt

laſt he eſteems of inferior virtues to the others. Theſe he thinks ſufficient to remove the ſcurvy, if, at the ſame time, proper diet is uſed, eſpecially well-baked wheat bread. He ſometimes gives a gentle purgative at firſt, and repeats it occaſionally: but if the diſeaſe is far gone, caution here muſt be had. When only the gums were affected, he has cured theſe often by topical applications. The large livid ſcorbutic ſpots like bruiſes, are oftener ſeen on the lower extremities than on the arms. If the diſeaſe is very virulent, and not removed, the *hypochondria* will alſo become livid; and the patient in this caſe be ſeized with violent gripes, and die.

1589. *De ſcorbuto propoſitiones de quibus diſputatum eſt publicè Roſtochii, ſub Henrico Brucæo.*

The ſcurvy is endemic in particular countries, from their ſituation, air, water, and food. In theſe countries, ſcorbutic mothers bear ſcorbutic children, often miſcarry, at other times bring forth dead fœtuſes. He mentions no other ſymptom, but what is taken notice of by *Wierus*; except a pain ſometimes in the right, at other times in the left *hypochondrium*, attended with a ſenſe of weight. Upon the malady's increaſing, the belly ſwells, and grows alſo painful; with an entire loſs of appetite. In his theory of the diſeaſe, he ſuppoſes, that either the liver, or ſpleen, ſometimes both, but oftner the ſpleen,

was

was obſtructed; although it was ſeldom found ſcirrhous. He afterwards ſays, there is often no ſwelling or obſtruction in any of theſe parts; though, from the quality of the ſcorbutic humour, produced by improper and groſs food, it was natural to expect the ſpleen might be affected. When the diſeaſe is very inveterate, it degenerates into the *affectio hypochondriaca*; a diſtemper frequent among the inhabitants on the ſhores of the *Baltic*. It is ſometimes complicated with other diſeaſes, *viz.* the dropſy, atrophy, and bilious diarrhœa; at other times there is a ſlow continual fever, and ſometimes a tertian intermittent.

His cure conſiſts in diet and medicines. For the firſt he directs well-baked wheat-bread; broth of fleſh or fowls, with radiſh, hyſſop, thyme, ſavory, or the like herbs. He allows all ſorts of fleſh or fowl (except water-fowls) that are of eaſy digeſtion, and afford good nouriſhment. Whatever is dried, ſalted, ſmoked, long kept, and rancid, or of groſs and difficult digeſtion, is to be avoided. Milk is proper for thoſe who are far gone in ſcorbutic atrophies. At table the antiſcorbutic herbs are to be uſed by way of ſalad; and for drink, ripe *Rheniſh* wine, or good ſound beer, with wormwood infuſed. After a gentle bleeding, if indicated by a *plethora*, and clearing the firſt paſſages with a lenient purgative; *cochlearia*, *naſturtium*, *becabunga*, and *rad. raphani*, are to be given boiled in milk; or

or their expreſſed juices, mixed with whey; adding *abſinthium* or *mentha*, if the ſtomach is weak; *acetoſa* and *fumaria*, where the conſtitution is hot, and a fever apprehended; or *rad. helenii*, and *herb. hyſſopi*, when the breathing is affected. If the patient is of a cold habit, has œdematous legs, and the ſpots are black, the juices are beſt given in wine, with cinnamon or ginger: or he may take an infuſion of *rad. raphani* in *Rheniſh*. The author likewiſe recommends the ſweating courſe from *Wierus*, particularly the laconic or dry bath, when the ſcurvy appears on the external habit or ſkin. The belly is to be kept open by gentle phyſic, given in goat-whey, repeated every day, or every other day, during the cure, as the patient bears it. This method, together with the diet before recommended, will effectually remove the ſcurvy. For lax and bleeding gums, he orders the pickle of olives; but in his other receipts tranſcribes from *Wierus*.

De ſcorbuto tractatus duo; auctore Balthazaro Brunero.

He has copied *Wierus* in moſt things; but is more explicit and full in deſcribing the air productive of the malady. Thus, if the atmoſphere of any place is impure, and polluted with exhalations that are groſs, moiſt, putrid, or liable to putrefaction, it begets this infection; as in marſhy, damp, and maritime countries; or places where ſtagnating

waters are left after inundations. To which alſo rainy ſeaſons contribute a great deal, eſpecially where the ſun has not influence ſufficient to raiſe and diſſipate the vapours of ſuch waters ſtagnating in the country and marſhes. To the diet obſerved by other writers to occaſion the ſcurvy, he adds black coarſe bread; and obſerves, that the pernicious effects of ſuch diet and air are conſiderably augmented, by immoderate watchings, the ſorrowful paſſions of the mind, and ſtoppage of the natural and uſual evacuations. Perſons, by way of prevention from this diſeaſe, when in the air of *Saxony*, take plenty of muſtard-ſeed, finding the good effects of it by experience, together with gentle aſtringents.

He deſcribes the ſymptoms and cure in the ſame manner as *Wierus*; only, by a typographical error, the *deliquium animi* is ſaid to occur when the patient ſweats; having *ſudat* inſtead of *ſedet* (when he ſits up). The whole is taken from *Wierus*; who immediately adds, *decumbens reſpirat faciliùs, reficiturque.* It may be proper to note another miſtake which he and many other authors have fallen into, in tranſcribing a medicine from *Wierus* for phagedenic ulcers of the gums. It is the following. ℞ *mercur. ſublimat. ſcr.* ii. *alum. uſt. dr.* ii. ſs. *aq. plantagin. lib.* i. *M.* But as this author, in his obſervations, wrote in *Dutch*, had called the firſt medicine ſimply *ſublimate*, after the manner of

of the chemiſts, by which he meant mercury; his tranſlator into *Latin* unluckily here put in arſenic, making it to be *arſenici ſublimat. ſcr.* ii.; in which dangerous miſtake many have followed him.

Brunerus has but one ſingular obſervation, *viz.* He has often remarked, that violent pains in the legs preceded the ſcurvy, and that the ſpots and putrefaction of the gums followed upon them. Theſe are chiefly about the ancles and joints; on the *tibia*, and ſoles of the feet; ſometimes in other parts of the body; attended with a ſenſe of heat and pricking betwixt the ſkin and fleſh. If they continue long, and eſpecially if they become moſt ſevere in the night, and do not yield to medicines, and are exaſperated by oily and greaſy applications, it is a certain ſign of a future ſcurvy. The pains ceaſe upon an eruption of the ſpots, which are here generally very large. In this caſe, warm ſteams, diſcutient fomentations and cataplaſms, muſt only be uſed, and, if poſſible, a ſweat procured upon the parts. He concludes with the caſe of a ſcorbutic patient; whom he firſt purged, then ordered the juice of water-creſſes in goat-whey; of which ſix ounces were taken twice a-day; and, by ſweating him, a number of ſcorbutic ſpots appeared, by which a violent pain in the thigh was allayed.

1593. *Scorbuti hiſtoria propoſita in publicum; à Solomone Alberto, &c.*

He is of opinion, that the diſeaſe may be hereditary, or got from an infected nurſe, and that it is contagious; but adds nothing to the deſcription or ſymptoms of it as delivered by *Wierus*, unleſs it be a ſtiffneſs or *rigor* of the lower jaw, ſeemingly from a contraction of the temporal muſcle; in the ſame manner as the tendons in the ham become ſtiff and contracted in the progreſs of this malady, as had been obſerved by all authors. He ſays, it is moſt uſual in children, and in either a hereditary ſcurvy, or that which is got from the nurſe.

He treats of the diet proper in this diſeaſe at great length: recommends the juices of acid and auſtere fruits, *viz.* oranges, and the like; with which roaſt meats when on the ſpit are to be ſprinkled. Theſe are likewiſe to be put in ſoops, and vinegar and wine in the gruels and barley-water. Exerciſe is neceſſary.

In his pharmaceutical directions, he orders bleeding at firſt, but only if there be a *plethora*; obſerving, that when the diſeaſe is advanced, eſpecially if the ſpots have appeared, it is extremely improper. In this caſe, if there is an obſtruction of the *menſes* or *hæmorrhoids*, theſe evacuations are by all means to be promoted; which will be of great ſervice, though they may not prove a cure; having ſeen women regular after child-bed, yet over-run with

with the ſcurvy. He preſcribes very gentle phyſic, obſerving the miſchief done by violent purgatives; then gives a numerous catalogue of aperient and deobſtruent medicines. Whatever incides, deterges, and attenuates groſs, viſcid, and fæculent humours, is proper, in order to their being prepared and fitted for evacuation by any of the outlets of the body. For this purpoſe, in a particular manner, the common antiſcorbutics, *viz. cochlearia*, *naſturtium*, and *becabanga*, are adapted; being ſuch whoſe virtues have been approved by long experience. To theſe he afterwards adds other herbs under the denomination of *hepatic*, *ſplenetic*, and *thoracic*; from an imagined property in them to remove obſtructions, and relieve and ſtrengthen particular parts and bowels. When by theſe means all obſtructions are removed, and the morbid humour, the immediate cauſe of the diſeaſe, is ſufficiently attenuated and prepared, he obſerves nature itſelf will throw it out of the body, either by the kidneys or ſkin. It is the buſineſs only of art, to farther her intention, by giving diuretics if it tends to the kidneys; having particularly remarked, that, by a flow of urine, the diſorders of the breaſt in this diſeaſe were moſt effectually relieved: or by taking diaphoretics and ſudorifics internally, at the ſame time ſweating in ſtoves and in baths moiſt and dry; as it is often diſſipated by inſenſible perſpiration, at other times by profuſe ſweats. The dregs of the diſeaſe

evacuated this way, have been obſerved to foul the very ſkin. He remarked, that ſcurvies were very frequent in that and the preceding year, from the unconſtant weather and very rainy ſeaſons they had after warm ſummers.

1595. *Petri Foreſti obſervationum et curationum medicinalium lib.* 20. *obſ.* 11. *de ſcorbuto malo cognoſcendo et curando; obſ.* 12. *ibid. de quinque ægris à ſcorbuto curatis.*

This is a long letter which the author wrote firſt to his brother in the year 1558, and afterwards ſent to his two nephews ſtudents in phyſic, *ann.* 1590. He ſeems to have been acquainted with no other authors upon this ſubject but *Ronſſeus* and *Echthius.* The laſt he copies in deſcribing the ſymptoms; all which he confirms and illuſtrates by various caſes of patients. He makes it a diſeaſe unknown to the ancients, though, according to his theory, a diſorder of the ſpleen. It was indeed ſo little known in his time, that many died of it (particularly one *Martin Dorpius*, a clergyman at *Louvain*) to the great ſurpriſe of the phyſicians, who were entirely unacquainted with the very name of the diſeaſe, its nature, or method of cure. He mentions likewiſe one *Saſbotus*, a counſellor at the *Hague*, who laboured under a virulent ſcurvy; and was given over by his phyſicians, when an *Amſterdam* phyſician diſcovered his caſe, and cured him; obſerving, that the

Hague

Hague doctors did not know this diſtemper ſo well as thoſe who reſided at *Amſterdam*, or as he did at *Alcmaer*, where they became well acquainted with it by ſeeing it among the ſeamen. This laſt patient being ſubject to a relapſe at times, our author preſcribed him the juices of brooklime and ſcurvygraſs boiled into a ſyrup with ſugar; which effectually prevented the diſtemper. And this medicine, going under the name of *ſyr. ſceletyrb. Foreſti*, became afterwards univerſally famous, and continued in repute for a conſiderable time, over all *Flanders*, *Brabant*, and *Holland*, for the cure of the ſcurvy. It was principally uſed in the winter-ſeaſon, when the green plants could not be procured. He indeed very ingenuouſly owns, that phyſicians were firſt made acquainted with thoſe remedies by the vulgar; they having only contrived the exhibition of them in more elegant forms.

He illuſtrates the ſeveral intentions of cure at great length in the caſe of a ſailor at *Alcmaer*, who fell into the ſcurvy after an autumnal quartan, which had continued with him ſeven months. This perſon told him, he had formerly the ſame diſeaſe at ſea, in a voyage to *Spain*; and that it was very common among the *Dutch* ſailors, who generally recovered by change of air, and the uſe of a wormwood-ale. But he had been quite cured of it before, having had the ague. Upon this occaſion, the author obſerves, he has known many fall into the ſcurvy after ſuch

intermitting fevers. The patient was troubled with a great difficulty of breathing, had loſt the uſe of his limbs; his left knee, and whole leg, being ſwelled, ſcirrhous, ſpotted, and ſo ſtiff, that he could not walk, or even move himſelf: his gums were ſwelled and bled. The phyſicians and ſurgeons ſaid, he was poxed; but when the author ſaw him, he found it to be the ſcurvy. It was indeed a complicated caſe; the fever having left behind it a hectic diſpoſition, with obſtructed bowels.

Foreſtus, who has had great practice in this diſeaſe, ſays, the pathognomic ſigns of it are, a ſtraitneſs of the *præcordia*; weakneſs and pain of the legs; redneſs, pain, and itching in the gums; with an alteration of colour in the face. However, in the beginning it is not ſo eaſily known; being ſometimes ſlow in its progreſs, and having the above ſymptoms, together with a laſſitude after exerciſe, common to it with other diſeaſes. But where all ſuch ſigns appear together, he thinks it the beginning of the diſtemper, or at leaſt there is ſome certainty of an approaching ſcurvy: though he ſometimes heſitates here for ſome little time; till, in the progreſs of the diſtemper, the violence of thoſe ſymptoms is increaſed; and the fœtid breath, ſpungy bleeding gums, looſe teeth, and purple and livid ſpots upon the legs, *&c.* confirm his former judgment of the diſeaſe. He proceeds to recite the ſymptoms from *Echthius*'s

epitome; adding, almoſt after each, inſtances of patients in whom they occurred. In particular, after the remarkable proneneſs to ſwoon in the height of the malady, he adds, that he has known ſeveral drop down dead inſtantly; as happened to a magiſtrate he mentions, who had a *Haerlem* phyſician to attend him, who ſaid he was poxed; the ignorant in thoſe days pronouncing all extraordinary and unknown diſeaſes to be the *lues venerea*. However, this gentleman's ſon, labouring under the ſame diſtemper, was cured by our author. He recommends butter-milk when the patient is inclinable to be hectic: but where there was no fever, he cured many by milk alone, in which *cochlearia* and *becabunga* were boiled. Theſe obſervations, although extremely tedious, are valuable for the many truly ſcorbutic caſes they contain.

1600. *Hieronymi Reuſneri diexodicarum exercitationum liber de ſcorbuto.*

This voluminous author, remarkable only for his theory, deſcribes the ſcurvy, in its different ſtages, altogether in the ſame manner as the authors before him; with the addition of the following ſymptoms. A hæmorrhage from the noſe, which he ſays is uſual even in the beginning of the diſeaſe; as likewiſe a continual ſpitting. Some have a pain at the mouth of the ſtomach, and there is a want of appetite; or at leaſt if they long for food, it is rather hurtful to them. He obſerves, that

ſcorbutical women are ſubject to the *fluor albus*, and *menſes diſcolores*. The urine is for the moſt part thin, pale, and watery, without any ſediment, and of a fœtid ſmell. The pulſe is low, weak, ſlow, and inordinate. He is extremely prolix on the cure. But it were to be wiſhed, that the many chemical and galenical remedies recommended, had been proved ſerviceable by experience, rather than by being agreeable to his theory.

1604. *De morbo ſcorbuto liber; cum obſervationibus quibuſdam, brevique et ſuccincta cujuſque curationis indicatione. Auctore Severino Eugaleno.*

This book muſt have been publiſhed by the author in a very looſe immethodical dreſs; as it has undergone ſeveral corrections by different editors; and the order of the whole is ſtill very inaccurate. *Joſ. Stubendorphius* publiſhed it in the year 1615, with great alterations: and *Brendel*, Profeſſor of Medicine at *Jena*, *ann.* 1623, again corrected it; and with great labour has claſſed the different ſymptoms, or rather ſpecies of this diſeaſe, into different ſections, making in all forty-nine in number. They will admit of ſeveral ſubdiviſions; and comprehend a pretty round catalogue of almoſt all diſtempers, acute or chronic, incident to the human body. There are here alſo fifty prognoſtics, with thirty general diagnoſtics of the ſcurvy; beſides the ſpecial diagnoſtics of each ſymptom, or rather diſeaſe,

by

by which it is known to be ſcorbutic. But as I have elſewhere animadverted at great length upon this book, it may be ſufficient here only to repeat, that the merit of the author has always been ſuppoſed to conſiſt in his great ſagacity in detecting this deceitful diſeaſe lurking under ſo many different forms. This he tells us was his profeſſed deſign in writing. So that the deſcription of the ſymptoms makes up the greateſt part of his performance. In the beginning of it, he aſſigns the ſame occaſional cauſes of the ſcurvy as *Wierus* had done much more accurately before him; and to this author likewiſe he recommends us for the cure. The firſt five pages (as far as § 4.) contain what he has copied from other authors: but the reſt of the treatiſe may, with great propriety, be deemed entirely new, and his own.

The ſymptoms are as follow. I. Putrid gums. II. Blackiſh, purple, and livid ſpots. III. Malignant ulcers. Acquainting us, that theſe are obvious ſigns, known even to the vulgar, he obſerves, that the diſeaſe often proves fatal before they appear; and therefore he proceeds without ſtopping long here, to other ſymptoms equally characteriſtical and demonſtrative of the ſcurvy. But before we go any farther, it will be neceſſary to tranſcribe that peculiar ſtate of urine and pulſe which he ſo often refers to in his account of the following ſymptoms, and which was with him the pathognomic ſigns of the diſeaſe.

The urine of thoſe who labour under this malady, varies extremely, according to the habit of the body, the different nature of the diſeaſe, and of the putreſcent humour. If there be only a ſlight putrefaction, and the diſeaſe but beginning, the urine is ſometimes of a citron colour, and thin; at other times thick and white. But ſuch urines diſcover nothing certain concerning the ſcurvy. As the diſtemper increaſes, it becomes ſometimes thin, and of an intenſe red colour, inclining to a livid hue. If the patient paſſes this urine when ſeemingly in perfect health, having little or no drought, it is a certain ſign of the ſcurvy. Frequently the urine appears thick, red, and manifeſtly livid; it either remains thus thick, or drops a thick red heavy ſediment like bran or ſand, beſides having for the moſt part a thick turbid matter ſuſpended a-top: ſuch likewiſe is a demonſtrative ſign of the diſeaſe, provided the patient languiſhes, without any thirſt or fever. Of ſome the urine is thick, white, and turbid; and drops ſeveral roundiſh whitiſh particles like ſand, without becoming any clearer. The urine of thoſe who live irregularly, is in ſome thick, black, and turbid; in others blackiſh, with an obſcure paleneſs; and theſe perſons have a violent thirſt while they paſs ſuch urine. After thoſe long accounts, he adds in another place, that where there is no fever, nor putrefaction of the humours, thick, white, and turbid urine, having a white roundiſh heavy ſedi-

ſediment, like ſand or brick-duſt, is the moſt undoubted ſign of the ſcurvy. The pulſe peculiar to this malady, is quick and ſmall, but particularly unequal.

We now proceed to tranſcribe the other ſymptoms. And the IV. is a difficulty of breathing; known to be ſcorbutic, *1ſt*, By the part affected; which is under the diaphragm, at the orifice of the ſtomach. *2dly*, By the complaint. It is a great and uneaſy ſtraitneſs and oppreſſion upon the *præcordia*, not eaſily expreſſed. *3dly*, By its remiſſion and intermiſſion; though ſometimes it is almoſt continual. *4thly*, By its having none of the ſymptoms which uſually follow diſorders of the breaſt, *viz.* cough, pain, *orthopnœa*, *&c.*

V. Vomitings, retchings; and even the *cholera morbus*. A vomiting is known to be ſcorbutic, *1ſt*, By not yielding to the common medicines, and thoſe preſcribed by the ancients in this diſorder; on the contrary, the patient becomes worſe after uſing them. *2dly*, Its ſudden unaccountable remiſſion, and equally unexpected return. *3dly*, Its ſeizing without any previous pain, diſorder of the ſtomach, or a diſtemper deſcribed by the ancients. The retchings are here very violent, without bringing up much from the ſtomach. But the moſt certain proofs are had from the urine and pulſe. VI. A looſeneſs, or coſtiveneſs of the belly. VII. A baſtard dyſentery; known to be ſcorbutic by want of gripes, the blood

blood not being mixed with the excrement; but chiefly by the pulſe and urine.

VIII. Irregular fevers. IX. Intermitting fevers. X. Continual fevers. Under theſe he comprehends moſt ſpecies of fevers, *viz.* flow, putrid, remitting, and intermitting, of all kinds. They are all aſcertained to be ſcorbutic, by the anxiety upon the *præcordia*, not agreeing in type with thoſe of the ancients, *&c.* but more infallibly by the pulſe and urine. The firſt, though ſtrong and hard during the fever, upon its remiſſion returns again to its peculiar, ſmall, and unequal ſtate.

XI. Fainting-fits. XII. Pains of the legs. XIII. A pain in the hands, and ends of the fingers. This is known to proceed from the ſcurvy by the pulſe. XIV. A pain in the neck. XV. Pains in almoſt every part of the body, *viz.* the teeth, jaws, back, *&c.*; burning pains in the kidneys, head, arms, *&c.* XVI. The baſtard pleuriſy; diſcovered in a girl to be ſcorbutic, by the ſmallneſs and inequality of the pulſe; the intermiſſion of the pain; and being free from cough but at times; by the urine, and her having no thirſt, and breathing without pain. But the intermiſſion of the pain, and its returning at intervals, are ſufficient to diſtinguiſh this from the true pleuriſy. XVII. Violent colic pains; eaſily known when ſcorbutic, by their intermiſſion, the urine, and pulſe. He gives two inſtances of ruptures occaſioned by the acuteneſs of theſe pains. XVIII. Hard tumours

ſimilar

ſimilar to thoſe in the pox, *viz.* in the groin, and other glandular parts of the body; or in any other part, as in the interſtices of the muſcles, *&c.* They are often varicoſe. Theſe give no pain while the patient is at reſt, and the part kept eaſy; but upon walking, or hanging the legs, they become ſo very painful as to occaſion fainting. Sometimes the whole body is covered with ſuch tubercles. XIX. Weakneſs of the legs upon walking. XX. Retraction of the heel backwards towards the ham; known when occaſioned by the ſcurvy, from the pulſe alone. XXI. Troubleſome prickings in the ſoles of the feet, next day followed with a palſy of the lower extremities. XXII. A palſy of the legs; diſtinguiſhed from palſies deſcribed in ancient authors, by differences very equivocal, and too long here to mention. XXIII. A *hemiplegia*. XXIV. Weakneſs of the whole nervous ſyſtem. XXV. A colic ending in a palſy. XXVI. A convulſion or contraction of the members, gradually approaching. XXVII. The epilepſy is known when ſcorbutic, by the pulſe and urine; as likewiſe, 1*ſt*, By its attack accompanied with a fever. 2*dly*, Its ſudden attack, and equally ſudden remiſſion. 3*dly*, Its proceeding from no cauſe aſſigned by the ancients. XXVIII. An apoplexy. XXIX. Convulſion of a particular part. XXX. The gout; known to proceed from the ſcurvy, by not being fixed, but ſhifting from one joint to another; and its being

being quickly cured by antiſcorbutics. XXXI. The dropſy; requiring quite a different method of cure from that deſcribed by the ancients; and is eaſily diſtinguiſhed from it, by the *dyſpnœa* becoming much worſe after purgatives. The difficulty of breathing is at all times greater, even in the beginning; with extreme anxiety under the diaphragm. XXXII. The encyſted dropſy. Before this is fixed in any particular place, it cauſes a momentaneous ſwelling as it were, in different parts of the body; which moſt commonly happens upon change from a finer to a thicker air, or to thoſe who uſe groſs food; otherwiſe the legs ſwell firſt, then the whole body is covered with a hard and unequal ſwelling, and with various indolent tubercles, *&c.* XXXIII. The ſcorbutic atrophy; which can be cured only by antiſcorbutics. It is known by the patient's languiſhing, without having any diſeaſe deſcribed by the ancients; by the pulſe, urine, and recurring anxieties; but eſpecially by ſpots on the body. XXXIV. Ulcers and gangrene of the toes. XXXV. Ulcers on different parts of the body, cancers, *&c.* XXXVI. Peſtilential fevers, and their tumours; diſtinguiſhed from the true plague, generally by the mildneſs of the ſymptoms, but more eaſily by the pulſe, and ſometimes by the urine. XXXVII. A mortification, either with or without ulceration. XXXVIII. The ſcorbutic *eryſipelas*; known by the pulſe, urine, and ſhifting its place. XXXIX. Madneſs,

neſs, and the memory impaired. Theſe two more rarely occur, being not ſo demonſtrative ſymptoms of the ſcurvy as many of the preceding. XL. *Carus*, and a profound ſleeping. XLI. A ſalivation. XLII. A *languor*, without any evident cauſe. XLIII. A diſorder like to a *languor*. XLIV. Copious ſweats, the forerunner of an atrophy. XLV. A cutting or tearing pain in the acceſſion of fevers. XLVI. A toſſing or concuſſion of the limbs, being a mixture of a paralytic and convulſive diſorder. XLVII. *Tremor* of the limbs. It is known to be ſcorbutic by the pulſe alone. XLVIII. Ulcers of the *penis*. XLIX. Dry ulcers. The book is concluded with ſeventy-two obſervations, containing a variety of caſes in theſe diſeaſes.

1608. *Felicis Plateri praxeos medicæ lib. 3. cap. 4. de defædatione.* Under which title, he treats of the *lues venerea*, *ſcorbutica*, and *elephantica*.

He ſeems not to have ſeen *Eugalenus*'s book, or at leaſt has copied nothing from it: for he ſtill delivers the ſame deſcription of the ſcurvy, as *Wierus*, and all other authors preceding *Eugalenus*, have done. He, however, takes notice of one ſymptom not mentioned by them, *viz.* tumours, ſometimes indolent, at other times more painful, reſembling a ſcrophulous gland. Theſe are ſeated either on the glandular parts of the body, or in the interſtices of the muſcles. The ſweat of ſcor-

butic

butic perſons is fœtid; their urine red and turbid; their pulſe feeble; as had been obſerved by all others before *Eugalenus*. He ſeems inclined to believe, that, like the *lues venerea*, the ſcurvy might have been brought from abroad, eſpecially by ſailors. It ſometimes produces convulſions and palſies; and may end in an atrophy, conſumption, dropſy, or dyſentery. He recommends for prevention, as alſo cure, a confection of muſtard-ſeed and honey; likewiſe the juice of oranges. This laſt is to be uſed for gargariſing the putrid gums; as alſo *ſal. prunell.* diſſolved in a proper liquor. The patient may be ſweated with *decoct. lignorum.*

1609. *Gregor. Horſtii tractatus de ſcorbuto.*

This author is in many places ſeemingly inconſiſtent with himſelf; having firſt followed *Foreſtus*, then *Eugalenus*, in his deſcription of the diſeaſe; concluding with a diet, regimen, and cure, tranſcribed chiefly out of *Albertus*. The remote cauſes are, thick foul air, and groſs viſcid food; both which, as productive of the ſcurvy, he pretty well deſcribes. He obſerves, that though in the *Lower Saxony*, and *Old Marche* of *Brandenburgh*, it was a diſeaſe generally very well known; yet in ſome places it was a much rarer and ſlighter malady than in others; being moſt frequent and dangerous where they uſed thick unwholſome new ale, and where the ſoil was marſhy and damp. So that the year before,

when he practiſed in the *Old Marche*, he found it extremely frequent at *Soltquell*; but much leſs ſo in the neighbouring country. In that place, beſides uſing the ſame groſs food as other northern countries, their ſituation was very marſhy; and they drank thick new ale hardly cold, without hops, which had undergone no fermentation or depuration. He recommends *ſp. vitriol.* given along with antiſcorbutics; and has perhaps nothing elſe new on the diſeaſe, but theory.

Matthæi Martini de ſcorbuto commentatio.

He copies entirely from *Eugalenus* his deſcription of the ſcurvy, adding ſome new ſymptoms firſt mentioned by himſelf; ſuch as, ſwelling of the eyes, recurring darkneſs over them; virulent ulcers upon the *uvula* and *fauces*; ſuch variety of pains in all parts of the body as cannot be expreſſed, *viz.* tenſive, pulling, pricking, biting, eroding, gnawing, *&c.* on the muſcles, membranes, and nerves. Theſe are not only ſevereſt in the night-time (as is moſt commonly the caſe) but afflict likewiſe in the evening, morning, and through the day. They may all with great certainty be known to proceed from the ſcurvy, by the ſmallneſs and inequality of the pulſe. Even pains peculiar to each part, are rendered wonderfully anomalous by the ſcurvy. This diſeaſe is nearly allied to the plague; as it occaſions carbuncles, buboes, cancers, *&c.* Moſt tertian vernal fevers are ſcorbutic.

A ſud-

A ſudden and unaccountable looſening and faſtening of the teeth; large fiſſures in the lips, cloſing in a moſt ſurpriſing manner after drinking, are ſymptoms of the ſcurvy. Here *Eugalenus* is every where an oracle; his whole book being tranſcribed, and digeſted into a much more methodical order, with the addition of ſome things from *Wierus*, *Albertus*, *&c.*

1624. *Dan. Sennerti tractatus de ſcorbuto. Ejuſdem practicæ medicinæ lib.* 3. *part* 5.

He has tranſcribed from *Eugalenus* and *Martini* all that they have ſaid on the diſeaſe. This, together with his theory, makes up the greateſt part of his book. What he calls his own new and rare obſervations, are as follow. One is the caſe of a ſtudent, who, upon the ſtriking in of an itch, was ſeized with a *gutta ſerena*, difficulty of breathing, and tightneſs of the breaſt. He recovered his ſight by the uſe of ſome purgative medicines, and diuretics of the antiſcorbutic kind. The other, a boy of twelve years of age, who had alſo the itch; and it being repelled by an improper unction, he loſt his ſight, and afterwards died epileptic. The author having often remarked, after an itch in ſuch a manner injudiciouſly treated, pains and prickings in the breaſt to enſue, with baſtard pleuriſies; and likewiſe tertian and quartan fevers, which were removed upon the appearance of the eruption, but returned again upon its diſappearing;

ing; from thence he concludes the ſcorbutic humour combined with the *ſcabies*, to have produced thoſe ſurpriſing ſymptoms.

He then proceeds to ſtill more uncommon and remarkable ſymptoms of the ſcurvy; and, upon the teſtimony of *Doringius*, relates caſes of a jaundice ending in a *hydrops aſcites*; an aſthma; a *tinea*, covering not only the whole ſcalp, but the forehead; a *herpes* of the left arm; a gangrene in the fore-finger; a hæmorrhage from the lips, no conſpicuous orifice of a vein being diſcovered; a palpitation of the heart; burning and intolerable pain in the ſoles of the feet, with livid ſpots on the legs; and a running of putrid and purulent matter from the *uterus*. *Timoth. Ulricus* obſerved not only the knees, but the whole body, as it were, contracted; with an excreſcence of fleſh from the eyes under the *palpebræ*; the *tunica adnata* of the eye being yellow, but the *palpebræ* of the ſame colour with the *iris*. In ſome, though more rarely, upon each motion of their joints, a noiſe was plainly heard as from broken bones, or like the crackling of nuts. Where there was a dropſy, in a night's time the whole teeth became looſe, ſo that the patient was in danger of loſing them all; but next day they were found firm in their ſockets. In a patient where no ſpots could be made to appear, even by the help of medicines, upon forcing a ſweat, the muſcular part of the arm was ſeized with a ſenſe of heat and burning,

as if drops of boiling water had been thrown upon it; mean while nothing was to be ſeen appearing outwardly. A widow in a continual fever, had her whole body covered with large black ſpots; her face reſembling in colour the ſkin of ſmoked bacon boiled. Upon which he concludes, ſuch is the ſtrange variety of diſeaſes and ſymptoms occaſioned by the ſcurvy, that not only the vulgar, but even a phyſician unacquainted with the diſtemper, would be greatly amazed, and might believe the perſon to have died of poiſon. He very ingeniouſly, however, accounts for them all, according to his own *hypotheſis*; making up ſixty-two ſymptoms, by adding ſeveral to what are mentioned by *Eugalenus, viz.* blindneſs; a ſtench of the body; a ſtoppage of the courſes in women; in place of which they have a white acrid ſaltiſh running, apt to infect men: and men from this diſeaſe are rendered unfit for generation, by having a watery vitiated *ſemen.* He is very prolix on the cure; copies from his predeceſſor *Albertus* the therapeutic intentions; and abounds with almoſt all the *recipe's* given by preceding authors, together with what he learned from other hands. Where there is a heat of the body, or fever, he uſes the cooling antiſcorbutics, *viz. cichoreum, endivia, acetoſa, acetoſella, ſucc. citri, aurantior. limon. ſp. ſalis, vitriol. vel ſulphur.* He recommends ſteel where there is not the convenience of mineral waters; but forbids the uſe of vinegar in this diſeaſe.

1626. *Arnoldi Weickardi theſaur. pharmaceutic. galeno-chemic. ſive tract. practic. &c. lib. 3. cap. 5. de ſtomacace, ſeu ſcorbuto.*

This author, although uſually ranked among the number of writers on the ſcurvy, has nothing new upon it. He makes no mention of the ſymptoms. His cure conſiſts in bleeding, purging, and afterwards ſweating the patient, and in adminiſtering the common antiſcorbutics in very improper forms; all tranſcribed out of other authors.

1627. *Frederic Vander Mye, de morbis et ſymptomatibus popularibus Bredanis, tempore obſidionis, et eorum immutationibus pro anni victuſque diverſitate, &c. tractatus duo.*

How far the paſſions and diſpoſitions of the mind contribute to the production and cure of diſeaſes, and how much their ſymptoms and appearances are diverſified by different ſeaſons and by different aliment, no where more clearly appeared than in this ſiege. We have ſeen the malignant progreſs of the plague, ſcurvy, and like diſeaſes, encreaſed upon the report ſpread of bad news, but altogether checked in a manner by the arrival of joyful tidings. We here beheld ſome apparently relieved, many perfectly cured, by their faith in imaginary remedies. Grief and fear greatly injure the human body, and in a particular manner give ſtrength and vigour to the plague and ſcurvy. But we proceed to relate the order in which theſe

diſeaſes occurred, and the influence of the various cauſes which gave riſe and diverſity to their appearances.

The preceding ſummer being very warm and dry, produced ardent fevers, ſome pleuriſies, a few peripneumonies, and *anginæ* of a ſalutary kind. Soon after the plague was brought hither by infection from *Holland*. In the autumn the weather was cloudy and rainy, with ſoutherly winds; the winter alſo proved wet and open, the ſeaſon being windy and mild. Here the author very minutely deſcribes the influence of ſuch a ſtate of weather, concurring with the various incidents of joy and grief, hope and deſpair, in diverſifying the ſymptoms of that calamity, and in encreaſing or abating the mortality. But as ſuch remarks are foreign to our purpoſe, we ſhall only obſerve, that in the end of winter a ſhort froſt came on, and put an entire ſtop to the plague. An univerſal joy now prevailed, occaſioned by the daily arrival of meſſengers giving the certain expectation of a ſpeedy relief, and that their own army was already in ſight. But theſe hopes were ſoon baffled, the attempts of the *Dutch* army proving fruitleſs. Scarcity of proviſions encreaſing in the town, the earth now opened, emitting its moiſt and putrid vapours from the lakes, added to a damp cloudy rainy *equinox*, produced a new calamity. The appearance of livid ſpots on the body, occaſioned at firſt a general conſternation. The ſurgeons

geons who were ignorant, declared the plague to have broken out again; but upon a cloſer examination, it was found to be the ſcurvy. This diſeaſe ſeemed to abſorb all others; ſo that for ſix weeks there was no talk of any other malady in the town. The calamity became great and univerſal; few eſcaped it; many deprived of all motion, waſting away by piece-meal, toothleſs and ſtarved, as not being able to chew their food, died in a moſt piteous condition.

It proceeded from diſappointments and ſorrow of mind, as alſo unwholſome food. The States of *Holland* had taken care to provide this city for a ſiege, with rye, cheeſe, and dried fiſh. The cheeſe and fiſh had at times been changed, but their ſtock of rye not for thirty years. Thence it was become quite ſpoiled and muſty. Being altogether improper for baking, it was mixed up with other grain, and all who eat of it began to be affected with the ſcurvy. Eating of the old cheeſe, which was rotten, as alſo of dogs and horſe-fleſh, but particularly the wetneſs of the ſeaſon, contributed much to the production of the diſtemper: the air which the ſoldiers breathed, and the houſes where they lay, being extremely damp. They alſo lay together, ſo received it by infection; for the diſeaſe proves infectious when perſons uſe the ſame improper food, and breathe the like intemperate air.

In ſome the gums were rotten; in others ſpots only appeared on the body, eſpecially in ſuch as had hæmorrhages of blood, the diſcharge of which ſometimes prevented, at other times diminiſhed the ſwelling of the gums. Theſe ſpots were chiefly upon the legs. They were alſo to be ſeen upon the back, on the arms, breaſt, neck, as likewiſe upon the face, even when the gums continued ſound; chiefly in ſuch as took care to preſerve their teeth, and for ſecurity were continually waſhing their mouth with aſtringent compoſitions of ſalt, alum, and the like. At firſt the ſpots were red, then became purple, afterwards livid, and laſt of all quite black. The livid ſpots were very dangerous, but the black ſtill more malignant and fatal. A few of the eruptions put on the appearance of an *eryſipelas*, and ſeparated from the reſt of the *cutis* in ſcales. In moſt patients the ſkin was of a purple hue. An enervated, heavy and languid body, without having any complaint of real ſickneſs, and a fœtid breath, were ſymptoms common to all. The knees became affected with that ſpecies of gout called by the *Greeks gonagra*, differing from the *arthritis vera*, in that the pain is unconſtant.

The tendons of many of the poſterior muſcles of the thigh turned as rigid and hard as a piece of wood, ſo that the leg being bent altogether back to the buttock, it became quite immovable; and of the joint in the knee, there remained no veſtige. Exquiſite pains were

were felt along the courſe of the *ſciatic* nerve, and in the deep-ſeated articulation of the thigh bone. Some expired ſuddenly and unexpectedly when at their meals; eſpecially thoſe who had been troubled with palpitations of the heart. The heart itſelf is greatly affected in the ſcurvy with palpitations, tremors, frequent *deliquiums*, frequent anxieties, and a want of natural and vital heat; hence a redundance of aqueous, crude, and excrementitious humours in the whole body paſſing off by profuſe ſpitting, urine, and fœtid ſweats. In many the gums grew up to ſuch a pitch as to bury the whole teeth, and ſometimes part of the cheek bone dropped off. In this caſe the miſery was intolerable, though the pains gave ſome little relief by ſhort intermiſſions, the gangrenous fleſh of the gums not having been ſpeedily removed; the taint had ſpread and preyed upon the bones. The diſeaſe was ſeldom accompanied with a fever, but frequently with a dyſentery, or other flux of the belly. Where there was a fever, it was generally of the erratic or ſlow kind. We obſerved one or two of theſe fevers ſomewhat to reſemble the plague. The mouth was dry, though the patient had but little inclination to drink; the pulſe was ſmall and irregular; there were frequent retchings and recurring anxieties; hard, blackiſh, cruſty abſceſſes appeared on the tibia, the anguiſh of which occaſioned often a pain, ſeldom a

tumour in the groin. But fevers at this time were extremely rare.

Of thoſe who were afflicted with the *diarrhœa* and dyſentery, few eſcaped, and that with great difficulty. They fell afterwards into *cachexies*, *lientries*, and dropſies. Watery ſwellings of the teſticles were frequent. The unhappy patients took a diſlike to drugs, and were apparently injured by the operation of cathartics. Some died early in the diſeaſe, *viz.* thoſe who had rarely any evacuation of blood by the noſe or *anus*, and were from the beginning indolent, diſpirited, and blown up as it were with wind. Their ſtools were greaſy, fœtid, and of various colours, but not frequent. The blood drawn from the veins appeared livid, was ſtinking and thick, but did not coagulate. The diſcharges of the belly in this diſeaſe were indeed commonly watery and greaſy, but a flux did not relieve the malady. Where there were acute pains of the *abdomen*, inteſtines, and ſtomach, in this caſe little hopes of life remained, by reaſon of the intenſeneſs of the pains, the ſtrength of the patient having been exhauſted by the violence of the diſtemper. In a word, whether the diſeaſe was protracted to a longer or ſhorter period, moſt died from an internal fault in the *abdomen*; the flux proving rather a pathognomic ſign of the ſcurvy than a critical and ſalutary diſcharge.

It was obſerved before, that the ſcurvy broke out about the equinox, and it quickly

encreaſed

encreaſed to an almoſt incredible degree. On the 20th of *March* 1625, an account was taken of the number of patients, and there were found 1608 ſoldiers labouring under it. The ſick were ordered to be claſſed into three diviſions; for the ſuperintendance of each of which a phyſician, an apothecary, and two ſurgeons were appointed. Three hours were employed every day in viſiting and preſcribing for the patients. We here beheld an exact picture of the diſeaſe, and at firſt, even during a time of ſcarcity, were fortunate enough in its cure. At this period the dyſentery and other fluxes of the belly were ſo trifling and uncommon, that we gave no attention to them, directing our whole care to remove the diſeaſe itſelf. In the beginning, the ſhops being well provided with medicines, this decoction was uſually preſcribed. ℞ *Lign. guaiac. lib.* i. *cort. ejuſd.* ʒiv. *rad. ſarſæparil.* ʒi. ſs. *enul. camp. petroſel* āā ʒi. *cort. tamariſc rad cappar* āā ʒij. *bacc. juniperi, lauri, ſem. naſturt. hort. aniſi, fœnicul. carv.* āā ʒvi. *citri* ʒij. *geniſt* ʒ ſs. *herb. abſinth. chamædr. ſcolopend. fumar. lupuli,* āā *m* ij. *cinamom* ʒiv. *aq. font. lib.* cxx. *coq. ad quarto partis conſumptionem.* The following liniment was directed for the gums. ℞ *Mel lib.* iij. *ſal. prunel. alumin* āā ʒiij. *ung. Ægyptiac.* ʒi. *lb.*

The number of the afflicted began afterwards daily to decreaſe, owing partly to the lucky circumſtance of our ſpies having brought into the town a quantity of tobacco, by the

uſe of which many were preſerved from the diſeaſe, while others were recovered: to which likewiſe the more liberal uſe of wine, permitted at this time to be ſold by the magiſtrates, was ſuppoſed to have contributed its ſhare: at this ſeaſon alſo the days began to lengthen, the ſun to ſhine forth with comforting heat, and the nights grew warmer; ſo that in leſs than a month's time we found the number of ſcorbutic patients reduced to 800. But theſe were left in a moſt pitiful condition indeed! the ſhops were now exhauſted of medicines; the ordinary remedies adminiſtred did not avail; our proviſions grew daily worſe, and ſo ſcarce, that the corrupted grain, which by order of the magiſtrates had been condemned, was ordered to be diſtributed; and to complete our misfortunes, no appearance preſented itſelf of relief; all expectation from the *Dutch* army was gone, nothing but abandoned hopes remaining: *una ſalus victis nullam ſperare ſalutem.*

We were now quite at a loſs what meaſures to purſue: however we put on the beſt countenance. We changed the medicines, extolled the efficacy of our preſcriptions, doubled their doſe, talked largely of the number cured, magnifying in every reſpect our ſkill and ſucceſs. By theſe means we protracted time for near a month longer. But the miſerably afflicted began to diſcover the deceit, particularly ſuch of them as had been before ſhut up in beſieged places, and had obſerved

ſerved the like artifices practiſed. The ſoldiers, no longer able to ſuffer in a ſituation harder to be born than human nature is accuſtomed to, give themſelves up intirely to deſpair. They refuſe to do any longer duty: deliver up their arms to the Governor; and threatening a mutiny, conſpire to ſurrender the city to the enemy. This the terribleſt circumſtance of all, *viz.* their abſolute deſpair, gave riſe to a variety of miſery; hence ſordid fluxes of the belly, dropſies, and every ſpecies of diſtreſs *(a)* afflict them, a great mortality proceeding this way.

Quis tibi nunc civis cernenti talia ſenſus.

The phyſicians at this time giving up entirely with the cure of the diſeaſe, direct their whole art to remove the flux and alleviate the more preſſing ſymptoms. Nothing was left unattempted to recall the drooping ſpirits of the ſoldiers, and to allay their turbulent minds. Recourſe was had to *philonium romanum*, *laudanum*, and even crude opium itſelf. By ſuch means a truce was gained, but of ſhort duration; for the evacuations being thereby ſtopped, the legs became more unweildy. A dropſy enſued, the tendons became rigid, and ſudden death ſtepped quickly in to put an end to farther woe.

On the 2d of *May* 1625, when the Prince of *Orange* heard of their diſtreſs, and underſtood that the city was in danger of be-

(a) In the original, *Omne chaos morborum.*

ing

ing delivered up to the enemy by the ſoldiers; he wrote letters addreſſed to the men, promiſing them the moſt ſpeedy relief. Theſe were accompanied with medicines againſt the ſcurvy, ſaid to be of great price, but ſtill of greater efficacy: many more were yet to be ſent them. The effects of this deceit were truly aſtoniſhing! three ſmall phials of medicine was given to each phyſician, not enough for the recovery of two patients. It was publicly given out, that three or four drops were ſufficient to impart a healing virtue to a gallon of liquor. We now diſplayed our wonder-working balſams. Nor were even the commanders let into the ſecret of the cheat put upon the ſoldiers. They flocked in crowds about us, every one ſoliciting that part may be reſerved for their uſe. Chearfulneſs again appears on every countenance; and a univerſal faith prevails in the ſovereign virtues of the remedies. The herbs now beginning to ſpring up above the ground, we of theſe make decoctions, to which wormwood and camphire were added, that by the prevalent flavour of thoſe, they might appear medicines of no mean efficacy. The ſtiff contracted limbs were anointed with wax melted in rape-ſeed, or lint-ſeed oil. The invention of new and untried phyſic is boaſted; and amidſt a defect of every neceſſary and uſeful medicine, a ſtrange medley of drugs was compounded. The effect however of the deluſion was realy aſtoniſhing:

for

for many were quickly and perfectly recovered. Such as had not moved their limbs for a month before, were ſeen walking the ſtreets ſound, ſtreight, and whole. They boaſted of their cure by the Prince's remedy; the motion of their joints being reſtored by a ſimple friction with oil; and the belly now of itſelf well performing its office, or at leaſt with a ſmall reſiſtance from medicine. Many who declared they had been rendered worſe by all former remedies adminiſtred, recovered in a few days to their inexpreſſible joy, and the no leſs general ſurpriſe, by their taking (almoſt by their having brought to them) what we affirmed to them to be their gracious Prince's cure *(b)*.

Soon after this their old calamity the plague broke out again. Not one in a hundred eſcaped of thoſe who were ſeized with it. So that a victorious *Spaniſh* army, an eight months

(b) This curious relation would perhaps hardly gain credit, was it not in every reſpect conſonant to the moſt accurate obſervations and beſt atteſted deſcriptions of the diſeaſe. See Lord *Anſon*'s voyages, part 3. *Item.* Mr. *Ives*'s journals, p. 94. *&c.* It is given us by an eye-witneſs, an author of great candour and veracity, who, as he informs us, wrote every day down the ſtate of his patients; and ſeems more to be ſurpriſed with their unexpected recovery, than he poſſibly would have been, had he formerly been better acquainted with the nature of this ſurpriſing malady. Theſe facts were then alſo notoriouſly known to many, at the time when he publiſhed his book, *viz.* the ſecond year after they happened.

Might not the ſpeedy recovery of the patients be partly owing to the decoction of the green herbs beginning to ſprout up? Be that as it may. An important leſſon in phyſic is here to be learned, *viz.* the wonderful and powerful influence of the

months famine, the rage of the plague within, and the fury of the bomb-ſhells from without, depopulating and laying waſte the city, the promiſcuous funerals of parents and friends, the diſmal apprehenſions of a diſheartened and reduced garriſon, want of medicines and common neceſſaries, bad and unnatural food, having all conſpired to the ruin of this important place, it was ſurrendered by capitulation in *June*.

As to the ſcurvy. The calamity proved moſt fatal to the *Engliſh* ſoldiers, as they very early began to feed on dogs fleſh, were in want of their beloved tobacco, and lay in the moſt wet damp barracks. It was much leſs frequent among the *Waloons* and *Flemings*, they being more careful and delicate in their diet, and having much wholſomer quarters. Among the *French* it was but rarely to be met with, owing entirely to their being ſtationed in the drieſt part of the town, and to their natural ſprightly diſpoſition, being conſtantly employed in ſome motion or exerciſe, finging, and the like. I do not here touch

the paſſions of the mind upon the ſtate and diſorders of the body. This is too often overlooked in the cure of diſeaſes; many of which are ſometimes attempted by the ſole mechanical operation of drugs, without calling in to aſſiſtance the ſtrong powers of imagination, or the concurring influences of the ſoul. Hence it is, that the ſame remedy will not always produce the like effect even in the ſame perſon, when given by different hands; and that common cures often prove wonderfully ſucceſsful in the hands of bold quacks, but do not anſwer the purpoſe in a timorous and diſtruſtful patient.

upon

upon the many different ſymptoms deſcribed by authors in this diſeaſe; thoſe that occurred in this ſiege, I have faithfully related. From whence it will appear, that the ſcurvy is not a hodge-podge or complication of various different diſeaſes, but is itſelf a ſimple identical malady. It is extremly difficult during the time of a long cloſe ſiege, to preſerve the citizens and ſoldiers from this cruel diſaſter. I am perſwaded the beſt method would be to permit them the uſe of brandy or ſpirits during a cold moiſt ſeaſon, and when convenient food is wanting. Waſhing the mouth with brandy, is excellent for ſtrengthening the gums and teeth.

1627. *Gul. Fabricii Hildani obſerv. et curationum chirurgic. cent. 5. obſ. 5.*

There is here a ſhort letter to the author from *Ludov. Schmid*, giving an account of the Prince of *Baden*'s youngeſt ſon, a child of fourteen months, afflicted with the ſcurvy; who was cured with antiſcorbutics. *Hildanus*, in his anſwer, mentions an obſtinate ſcorbutic ulcer cured likewiſe by antiſcorbutics; which is all that is to be met with on this diſeaſe in the works of that celebrated practitioner.

1633. *Joannis Hartmanni praxeos chymiatricæ p. 345. de ſcorbuto. Ed. Genev. Opus poſthumum.*

He is the firſt who obſerves the pernicious effects of mercury in the ſcurvy; for the cure

of

of which he relies much upon ſome chemical preparations, *viz. tartar. vitriolat, ſp. vini tartariſat. &c.*

1640. *Lazari Riverii praxeos medicæ lib. 12. cap. 6. de ſcorbutica affectione.*

As the ſcurvy was hitherto ſo little known in the ſouthern parts of *Europe*, that it had not been ſo much as mentioned by any author there, he likewiſe would have omitted treating of it; the diſeaſe never appearing in *France*, attended with all the ſymptoms deſcribed by northern writers. However, as diſeaſes were obſerved accompanied with ſome of its ſymptoms, and as thoſe authors inform us, that one ſymptom peculiar to the diſtemper was ſufficient to diſcover it, he would therefore deſcribe it. But as it was a malady by no means common in his country, where moſt phyſicians believed they had no ſuch diſeaſe, he does not pretend to deſcribe the true ſcurvy; therefore calls it the *affectio ſcorbutica*, as approaching near to it. He thinks the ſcurvy nothing elſe but the *affectio hypochondriaca*, attended with ſuch extraordinary and unuſual ſymptoms as denote a degree of malignity; and imagines the *pancreas* is often affected.

1645. *Conſilium medicæ facultatis Hafnienſis de ſcorbuto.*

This was publiſhed for the benefit of the poor in the country; and is divided into four ſections.

ſections. The 1ſt recites the cauſe of the diſeaſe, and the ſigns by which it is known; the 2d, how it may be prevented; the 3d, how it ought to be cured; the 4th, what is proper for the removal of its primary ſymptoms.

Sect. 1. They obſerve, that it is an endemic evil with them and other northern nations. It attacks the patient in various ſhapes, according to his habit and conſtitution, or other diſeaſes with which it may be complicated. The immediate cauſe, is a bad concoction, from a crude, melancholy, corrupted humour, oppreſſing the organs, both of the firſt digeſtion in the ſtomach, and of ſanguification. Hence enſue for the moſt part difficulty of breathing; ſwelling, putrefaction, and bleeding of the gums; looſe teeth; a weakneſs, ſwelling, and ſtiffneſs of the legs; ſpots, and the like. The external cauſes are, 1. The impure, groſs, moiſt, and cold air of their country; thoſe perſons being moſt ſubject to it who live in the northern parts near the ſea, or where they are ſurrounded with lakes. 2. Groſs and corrupted food, *viz.* bad bread, not ſufficiently baked, made of ſpoiled flour; ſalt and dried fleſh and fiſh; old cheeſe; rancid butter; peaſe, and other grains, when ſpoiled; together with unwholſome malt-liquors. 3. Thoſe of a ſedentary inactive way of life are moſt afflicted with it; together with thoſe, 4. who are apt to be coſtive, or labour under a ſuppreſſion of any na-

tural evacuation; as alſo the dejected and ſorrowful. 5. This diſeaſe often ſucceeds others; as obſtructions of the liver and ſpleen, and particularly quartan agues. It is likewiſe hereditary and infectious. From theſe external cauſes proceeds the internal or immediate cauſe of the diſeaſe before-mentioned. Although the malady may not eaſily be diſcovered in the beginning, by reaſon of its appearing under the form of other diſeaſes; as alſo from its unexpected and ſlow attacks (ſo that, in countries in which it is endemic, we are to ſuſpect anomalous diſeaſes not yielding to the uſual remedies, eſpecially if the patient is of a melancholy diſpoſition, to be ſcorbutic); yet when the diſtemper is violent, it is eaſily known. It is uſually preceded by a laſſitude of the whole body, weakneſs of the legs, breathleſſneſs upon walking, a livid colour of the face, and by a greater corpulency. In its progreſs, flying heats become troubleſome; the gums itch, with a great flow of *ſaliva*; the urine is ſometimes turbid, at other times quite watery. When farther advanced, the difficulty of breathing is ſo great, that the patient cannot walk or move himſelf but he falls into a ſwoon; of which he recovers when laid in bed. It is attended with colic-pains; the gums are ſwelled, and bleed upon the leaſt touch; the teeth are looſe, and fall out without pain, the fleſh at their roots being quite putrid; the breath is fœtid; and the legs ſwell, and grow ſtiff, ſo that the patients

tients cannot walk. Sometimes on the legs, and over the whole body, there appear various red, purple, or azure ſpots. Now and then they are afflicted with the *eryſipelas*, malignant ulcers, and nocturnal pains; and ſometimes the body waſtes away. Different fevers, and various ſymptoms, almoſt of every kind that can be mentioned, often accompany this diſeaſe. The urine is turbid, thick, and clayiſh, of a purple colour; but it does not long retain the ſame appearance. The pulſe is variable; ſometimes weak, at other times ſtrong, when the patient ſeems very weak; and now and then it is altogether obſcure. This evil is eaſily removed by proper remedies in the beginning; but when advanced, it is not ſo eaſy to prevent relapſes. Where proper diet and medicines are neglected, health is ſeldom reſtored. It commonly ends in a dropſy or atrophy. A difficulty of breathing, and black ſpots on the legs, are dangerous ſymptoms; as alſo continual pains and *borborygmi* about the navel. A hereditary ſcurvy is ſeldom cured. It is a more dangerous diſeaſe in old people than in young. Where the mouth is affected, remedies are ſpeedily to be uſed; otherwiſe the malady ſpreads farther, and may infect the whole throat. Fevers and ulcers accompanying this diſeaſe, cannot be cured without antiſcorbutics.

Sect. 2. Prevention is propoſed, by living in dry lodgings; fumigating apartments, with

the ſteam of aromatic woods and gums; and by avoiding ſuch food as has been obſerved productive of the diſeaſe. There is likewiſe recommended the uſe of a wine medicated with wormwood; and ſeveral other warm, bitter, aromatic ingredients. The belly is at all times to be kept open, and the other evacuations (eſpecially when ſuppreſſed) are duly to be promoted. Exerciſe, baths, phyſic in the ſpring and autumn, are alſo neceſſary. They who are very ſubject to it, are to take now and then two or three ſpoonfuls of the following antiſcorbutic water; which may be made more pleaſant and ſtronger, by adding ſome of their ſcorbutic ſyrup, which is the ſame with *Foreſtus*'s. ℞ *Rad. raphan. ruſt. lib.* iii *ſcorzon. unc.* ii. *cort. rad. cappar. tamariſc. ana unc.* ſs. *fol. cochlear. naſturt. aq. petroſel. becabung. recent. ana manip.* iii. *ſem. cochlear. cardui bened. aquileg. fœnicul. ana dr.* iii. *crem. tartar. dr.* ii. *gran. paradiſ. cardamom. ana dr.* i. *Affunde vini Rhenan. lib.* xii. *aq. cochlear. fumar. ana lib.* i. *Stent in digeſtione 24 horis, dein per cineres deſtillentur.* Or they may take the juice of ſcurvygraſs mixed with wine; or their *elect. ſcorbuticum*, which is the conſerves of ſeveral antiſcorbutic herbs, with the addition of a very ſmall quantity of *ſpr. vitriol.*

Sect. 3. and 4. containing the indications of cure, and the treatment of the ſymptoms, have nothing new; the medicinal intentions being pretty much the ſame as directed by *Albertus.*

Albertus. The whole is concluded with a number of long preſcriptions, adapted to the various intentions of prevention and cure delivered in the *conſilium.* Here the prices of the ſeveral medicines are marked for the ſake of the poor.

1647. *Bericht und unterricht von der kranckheit des ſchmertzmachenden ſcorbocts:* or, An account and information concerning that painful diſeaſe the ſcurvy. By *John Drawitzs.*

This book has undergone no leſs than four editions, being eſteemed the beſt written upon the ſubject in the *German* language. The diſeaſes treated of as proceeding from the ſcurvy, are as follow. 1. The gout. 2. A ſpaſmodic affection. 3. The palſy. 4. Pains in other parts of the extremities, though not in the joints. 5. The headach. 6. The toothach. 7. The pleuriſy. 8. The belly-ach; or the ſcorbutic colic, and iliac paſſion. 9. A pain about the *os ſacrum*, back, and *perinæum*, reſembling a true fit of the ſtone. He had been certainly informed from the *Eaſt-Indies*, that the ſailors there were ſpeedily and effectually cured of the ſcurvy, by eating oranges; which he finds great difficulty to reconcile to his theory of the diſeaſe. He had heard from *Dantzick*, that ſome maſters of ſhips carried out with them an acid water, got in the preparation of *antimon. diaphoret.* which prevented the ſcurvy at ſea.

1662. *Baldaſſaris Timæi opera medico-practica.*

This author gives us many hiſtories in his writings, of ſuch caſes as he deemed ſcorbutic, *viz.* Book 1. of practical caſes and obſervations; caſe 3. a ſcorbutic headach; caſe 7. a ſcorbutic delirium; and caſe 15. the hypochondriac melancholy, beginning with the ſcurvy. In his 3d book, caſe 24. an *hydrops aſcites*, joined with the ſcurvy; and caſe 32. the *affectio hypochondriaca*, with this diſeaſe alſo; caſe 35. a ſcurvy and atrophy, of which the patient died; caſe 36. the *arthritis vaga ſcorbutica*. Book 6. caſe 15. *ſcabies pruriginoſa ſcorbutica*. Book 8. caſe 15. a ſcorbutic tertian; and caſe 18. a ſcorbutic quartan.

In his epiſtles, book 3. epiſtle 10. 11. and 12. the *cachexia ſcorbutica*; epiſtle 20. and 28. the *affectio hypochondriaca ſcorbutica*; and book 5. epiſtle 9. the *arthritis vaga*. His method of cure, which has nothing new in it, is to be found in the 34th caſe of his 3d book; by which he ſays he generally ſucceeded, unleſs the ſcurvy was hereditary, or very deeply rooted: as likewiſe in the 29th and 30th epiſtles of his 3d book; where we have the treatment of the Queen of *Sweden*, when labouring under this diſeaſe, by the celebrated *Hermannus Conringius*. And there (epiſtle 29.) we have mention made of a new ſcorbutic ſymptom, by *Otto OEſlerus*, *viz.* a burning internal pain, ſeated in the meſentery,

tery, attended with violent drought, and colics moſt violent in the night.

1663. *Valentini Andreæ Moellenbrocii, de varis, ſeu arthritide vaga ſcorbutica, tractatus.*

He makes the ſcurvy a moſt univerſal diſeaſe, a calamity common almoſt to all mankind. Its immediate cauſe is, a volatile ſalt in the blood, endued with great acrimony and malignity. The laſt of theſe properties he thinks demonſtrable, from the ſudden weakneſs and proſtration of ſtrength, anxiety, and difficult reſpiration, that occur even in the beginning of the diſeaſe, as if the patient had ſwallowed poiſon; as alſo from an eruption of livid ſpots, which is often ſeen after death.

1667. *Thomæ Willis tractatus de ſcorbuto.*

He ſets out with telling us, that a great variety of ſymptoms, and diſorders of the moſt oppoſite kinds, are ſuppoſed to proceed from the ſcurvy; which, like a condemned and infamous name, has the ſcandal of moſt diſeaſes charged to its account. How far he clears up this confuſion, or has abridged the number, will appear by the following detail he gives of ſcorbutic ſymptoms. He obſerves, that no ſingle deſcription or definition of this diſtemper can be given; and, conſequently, that the beſt method of deſcribing it, is according to the different parts affected of the body; in all which it produces manifold ſymptoms.

He begins with the head: where the ſcurvy cauſes headachs, violent and habitual; and ſometimes vague, or periodical; oftentimes ſleepineſs, and dulneſs of the ſpirits, at other times obſtinate watchings; frequent *vertigines*, *ſcotomiæ*, convulſions, palſies, ſalivations, ulcers of the gums, looſe teeth, and fœtid breath.

The breaſt is affected with pains in different parts of its membranes, chiefly on the *ſternum*, where they are very violent, acute, and darting; frequent aſthma's; difficult and unequal reſpiration; ſtraitneſs of the breaſt; violent cough; inordinate pulſe; palpitation of the heart; frequent faintings, and the continual dread of them.

In the *abdomen*, where this diſeaſe has its principal ſeat, it begets a multitude of evils, *viz.* *nauſea*, vomiting, *cardialgia*, inflations and murmurings of the *hypochondria*, frequent colics, and moſt troubleſome ſhifting pains; an almoſt conſtant *diarrhœa*, ſometimes the dyſentery, or *teneſmus*; the *atrophia*, and now and then the *aſcites*. The urine is very often reddiſh and lixivial, having a cake ſuſpended in it, or adhering to the ſides of the glaſs; and ſometimes, though ſeldom, a great quantity of pale watery urine is diſcharged.

In the limbs, or even over the whole body, there are wandering pains, often very acute, and becoming worſe at nigh; a ſpontaneous laſſitude; waſting of the fleſh; *lumbago*, a weakneſs of the other joints; ſpots of various

ous colours on the ſkin; tumours, tubercles, and often *cacoethic* ulcers; a *ſtupor* or ſtinging pain about the muſcles; a ſenſe of cold as it were in the parts; contractions and *ſubſultus* of the tendons. Beſides theſe, ſcorbutic people are ſubject to irregular effervescencies of the blood, erratic fevers, and profuſe hæmorrhages. He concludes this long detail with obſerving, that theſe are the moſt common and uſual ſymptoms of the ſcurvy, ſometimes more, ſometimes fewer, of this or that kind, afflicting the diſeaſed: but beſides what have been already mentioned, there occur in it more uncommon and prodigious appearances.

The principal cauſes are, unwholſome air, and a vitiated *craſis* of the blood by preceding ſickneſs. In this diſtemper, either the blood, nervous juice, or both, are affected. The *dyſcraſy* of the blood is here twofold; either *ſulphureo-ſaline*, or *ſalino-ſulphureous*. If the firſt be the caſe, and the ſulphurs ſuperabound, then repeated bleedings, a cooling regimen, and the moſt temperate remedies are proper; avoiding above all things the hot and acrid antiſcorbutics. But, on the contrary, where there is the *ſalino-ſulphureous diathesis*, and the ſalts of the blood are predominant, then the warmer medicines are proper, and ſuch as are poſſeſſed of a volatile ſalt, together with ſteel and the like. The dyſcraſy in the nervous juice is threefold. It is, *1ſt*, Either too thin and poor; or, *2dly*, It has

has degenerated from its ſpirituous ſaline conſtitution into a ſharpneſs; or, 3*dly*, It may abound with heterogeneous and morbid particles. And, according to theſe imagined dyſcraſies of the blood and nervous juice, he makes a ſecond diſtribution of the ſymptom; and accounts for the whole number he enumerates in this diſeaſe, which he ſuppoſes to be hereditary and infectious.

The therapeutic intentions are divided into three claſſes. 1. The preſervatory; under which he lays down the proceſs of cure, or rather the method in general of removing the cauſes of the diſeaſe. 2. The curatory, or means of alleviating and relieving the moſt urgent ſymptoms. The 3d comprehends what he calls *the vital indications*, or the means of preſerving and reſtoring the ſtrength and health of the patient.

The preſervatory intentions, or cure, conſiſt in cathartic, digeſtive, and antiſcorbutic medicines; with blood-letting occaſionally repeated. If the ſtomach is much diſordered, or oppreſſed with phlegm, he gives a vomit, weaker or ſtronger, according to the ſtrength or habit of the patient. This in ſome he repeats every month, where it is indicated: otherwiſe he begins the cure with a purgative, which he repeats occaſionally, and of a different kind, ſuited to the warmer or colder conſtitution of the patient; or, to uſe his own terms, according as the *dyſcraſy* of the blood is *ſulphureo-ſaline*, or *nitro-ſulphureous*.

phureous. In both caſes he furniſhes us with variety of *formulæ*; obſerving, that they ſhould be repeated no oftener than at an interval of five or ſix days; as too violent and frequent cathartics ſerve only to weaken the tone of the *viſcera*, and ſtrength of the patient, without removing the diſeaſe. After once or twice purging, if a fulneſs of blood, and its viſcidity, make it neceſſary, the patient is to be bled in the arm, or with leeches in the hæmorrhoidal veins; rather repeating the operation, than taking away too much at a time. Thoſe evacuations being premiſed, according as they are ſeverally indicated; provided there be no urgency from any particular ſymptom, he proceeds to the general method of cure, *viz.* removing the cauſe, and extirpating the diſeaſe. For theſe purpoſes, the digeſtive and ſpecific antiſcorbutic medicines (divided into two claſſes, *viz.* hot and cold) are to be given every day, unleſs when under phyſic; to which, if needful, diaphoretics and ſudorifics may be joined. He calls theſe *digeſtive medicines*, which aſſiſt or reſtore the functions of the ſtomach, and other chylopoietic *viſcera*; and *antiſcorbutics* or *ſpecifics*, ſuch as remove the ſcorbutic dyſcraſy of the blood: both which are to be joined together, or at leaſt given the ſame day. *Cremor, ſal*, or *tinctura tartari, tartar. vitriol. chalybeat. el. propr. &c.* are proper digeſtives. They are to be adminiſtered in a ſmall doſe, evening and morning.

For

For the cold ſcurvy, he abounds with an ample variety of antiſcorbutic compoſitions, of *cochlearia, naſturtium aq. becabunga, cort. winteran. bacc. juniper. rad. raphani*, and other acid aromatic herbs and roots, together with their conſerves, the candied ſpices, *pulv. ari comp.* ſteel, *&c.* He has often ſucceſſfully preſcribed the following remedy. ℞ *ſum. geniſtæ manip.* iii. *minutim inciſ. Coquant. in cereviſ. fort. lib.* iii. *ad medietatem.* Two or three ounces to be given twice a-day.

In the hot ſcurvy, the more cooling and temperate antiſcorbutics are neceſſary. Of theſe he gives the ſame variety; making uſe, in moſt preſcriptions, of the *teſtaceous* powders, the abſorbents, *ſal. abſinth. &c.* He recommends wines made of gooſeberries, and other ſummer-fruits, but eſpecially cyder: obſerves *rad. lapathi acuti* to be among the beſt of our antiſcorbutics. This infuſed in ale, with brooklime, water-creſſes, ſliced oranges, citrons, pine-tops, *&c.* makes a noble remedy.

After having thus delivered the cure of the diſeaſe in general, he proceeds to the curatory indications for relief and removal of the moſt urgent ſymptoms. For a difficulty of breathing, and aſthmatic fits, he recommends cardiacs and antiſpaſmodics, *viz. ſp. cornu cervi, tinct. caſtor. flor. benzoin. el. propr. &c.* given in any ſcorbutic liquor. If the *dyſpnœa* be entirely ſpaſmodic, opiates afford the greateſt relief: acrid glyſters, ſudorifics,

and

and diuretics, are likewiſe ſerviceable. In ſcorbutic diſorders of the ſtomach, vomits, purges of rhubarb, *el. propr. &c.* with fomentations to the part, are neceſſary: opiates ſometimes give eaſe. In ſcorbutic colics, glyſters are to be given; fomentations, liniments, and cataplaſms, uſed externally; and opiates internally, eſpecially when joined with purgatives: the *teſtaceous* powders are proper; likewiſe the uſe of ſome purging mineral water, as *Epſom*. An inveterate *diarrhœa*, ſuch as ſcorbutic perſons are ſubject to, is not to be ſtopt by aſtringents: the mineral waters impregnated with ſteel and vitriol, are in this caſe the beſt medicines; and next to theſe, preparations of ſteel, eſpecially its *crocus*. A *vertigo*, faintings, palſy, and convulſions, require a mixture of cephalic and antiſcorbutic remedies. The other ſymptoms are to be treated likewiſe with ſuch medicines as are proper for the original diſeaſes compounded with antiſcorbutics.

He afterwards relates a ſymptom which he had obſerved three or four times, *viz.* a crackling of the bones upon moving the joints. Even upon turning in bed, by rubbing of the *vertebræ* on each other, a conſiderable noiſe was perceived, like to the rough handling of a ſkeleton; which he remarks is an almoſt incurable ſymptom.

Laſtly, We have what he calls the *vital indications*. He here directs the uſe of cardiacs, reſtoratives, opiates, *&c.* together with a pro-

a proper diet. He blames the immoderate uſe of ſugar in this preſent age, for the frequency and violence of the ſcurvy; and concludes with ſome hiſtories of caſes.

1668. *Morbus polyrhizos et polymorphæus.* A treatiſe of the ſcurvy. By *Everard Maynwaringe.*

To the cauſes of this diſtemper uſually aſſigned by others, he adds the uſe of tobacco, and immoderate venery; particularly the firſt, which he inveighs againſt at great length. He runs down all former theories and methods of cure recommended by authors; pretending to be poſſeſſed of moſt effectual remedies; which, however, he does not make public.

1669. *Praxeos Barbettianæ, cum notis Frederici Deckers, lib. 4. cap. 3. de ſcorbuto, et affectione hypochondriaca malè vulgò dicta hyſterica.*

Barbette gives a deſcription of the ſcurvy, and its ſymptoms, pretty much from *Eugalenus:* cautions againſt bleeding, and violent purgatives, in the cure; but thinks gentle phyſic proper at times, and that the peccant humour ſhould be prepared by inciding remedies; the moſt proper for this purpoſe being volatile ſalts. After a long liſt of the common antiſcorbutic medicines (to which *Deckers* ſubjoins many more, adapted to the particular ſymptoms of the diſeaſe) he obſerves,

ſerves, the *ſp. ſal. d. ammoniaci, et cochleariæ*, are the principal remedies. He concludes with two caſes: one a young man not able to walk through his chamber, who recovered in ſeven days by a decoction of *rad. raphani* in whey; another, a merchant, having ſcorbutic ſpots, who was cured by the uſe of *ſpir. ſal. ammoniac.* and proper diet. *Deckers* adds another caſe, and ſeemingly a very genuine ſcurvy, which was removed by fourteen drops, for a doſe, of the *ſp. ſal. ammoniac.* given in an infuſion of *rad. raphani* in wine.

1672. *De ſcorbuto liber ſingularis; auctore Gualtero Charleton.*

Obſerving it might be a taſk fit only for *Jove* himſelf to give an accurate account of the ſcurvy, and all its ſymptoms, he thinks it neceſſary to give only a catalogue of thoſe which moſt frequently occur, and are the moſt afflicting. In this number he ranks almoſt all the ſymptoms enumerated by *Eugalenus*, *Sennertus*, and *Willis*; and afterwards diſtinguiſhes the diſeaſe itſelf into three kinds, from its different cauſes. The firſt is denominated a *rancid ſcurvy*, from the predominancy of the ſulphurs in the blood combined with ſome of its ſalts; the ſecond, a *ſcurvy from fixed ſalt*, where the tartareous or terreſtrial ſaline particles prevail; and the third, an *acid ſcurvy*, owing to a ſharpneſs and acidity of the blood and juices.

The

The ſymptoms peculiar to the firſt ſpecies, are, ſpots, *exanthemata*, puſtles, tubercles, and ulcerations, upon the external parts of the body; internally *cardialgia*, vomiting, *diarrhœa*, dyſentery, colics, together with the frequent effervescencies of the blood. When this ſpecies of the ſcurvy is inveterate, the *genus nervoſum* becomes affected. The ſymptoms are then, a giddineſs; tenſive headach; *ſcotomia*; *coma ſomnolentum*, or immoderate watchings; the night-mare, and ſometimes madneſs.

Of the ſecond ſpecies, the ſymptoms are, ſtraitneſs of the breaſt, palpitation of the heart, and faintings; numbneſs and laſſitude of the body; convulſive motions, and erratic pains in the joints.

In the third, or acid ſcurvy, there are continual irritations of the nerves; which are increaſed by the ſlighteſt paſſion of the mind; frequent *rigors* (a certain ſign of acidity in the humours); a ſenſe of cold in the back part of the head, and ſpine of the back, ſometimes running through the limbs; flatulent ſpaſms; convulſions, and what is commonly called the *hyſteric paſſion*; ſometimes coſtiveneſs; at other times the dyſentery; melancholy, with dread and deſpair; atrophy; ulcerations; laſtly, a gangrene, which generally cloſes the ſcene. From this acidity in the blood, proceed likewiſe, palpitations of the heart; a ſudden ſtoppage of the pulſe, attended with great anxiety, ending in a faint,

with a cold ſweat. When this ſpecies of ſcurvy has become inveterate and confirmed, it begets moſt violent and dreadful ſymptoms, *viz.* intolerable nocturnal pains, cancers, *&c.*

In the cure of the firſt ſpecies, we are to begin with gentle *cholagogue* purgatives prudently adminiſtered and repeated, and veneſection, if the diſeaſe is but commencing; proceeding to the digeſtive or temperate alterative medicines, that may correct the hot *ſulphureo-ſaline* ſtate of the humours. If the patient be of a hot temperament, and lean, ſcurvygraſs, and other hot antiſcorbutics, are to be avoided. Aſſes milk with juice of dandelion, or a water diſtilled from the milder antiſcorbutics with cyder or cows whey, is then to be uſed. A pint of warm whey, with the addition of ten drops of *ſp. cochlear.* or *ſp. ſal. d.* may be drank night and morning for ſome weeks together. The mineral waters are likewiſe ſerviceable; obſerving at the ſame time proper rules with regard to diet and exerciſe. After thoſe courſes (during which the patient muſt take a purgative every week) the cure is to be compleated by reſtoratives and corroborants. The beſt is, a ſmall ſubacid wine, medicated with the temperate, but aromatic and ſtomachic antiſcorbutics, or confections of the ſubacid fruits, *&c.*

For cure of the ſecond ſpecies, proceeding from a fixed ſalt, the only proper medicines are thoſe which abound with a volatile ſalt,

viz. the warm antiſcorbutics. Digeſtive and cathartic medicines muſt be interpoſed at times, together with ſudorifics and diuretics, according to the tendency of the tartareous humour to the ſkin or kidneys. Steel mineral waters are to be uſed, if the patient is of a hot temperament. After thoſe courſes, recovery is to be perfected by corroborants and analeptics. The beſt of theſe is fennel-wine.

The cure of the third ſpecies, or acid ſcurvy, is to be begun with gentle *eccoprotics*, which makes way for bleeding; proceeding afterwards to deobſtruents (ſuch of this claſs as are mild) joined with temperate antiſcorbutics, but eſpecially ſuch remedies as are proper in the hypochondriac diſeaſe with obſtructed *viſcera*. Afterwards antacids are to be given, *viz.* volatile ſalts of any kind, or the teſtaceous powders, lixivial ſalts, oily emulſions, and chalybeate medicines. Milk almoſt of any kind is proper; as likewiſe whey medicated with the temperate antiſcorbutics; broths of ſnails, cray-fiſh, *&c.* The cure here, as in the before-mentioned ſcurvies, is to be concluded by corroborants; ſuch particularly as are recommended by authors at the cloſe of the *melancholia hypochondriaca*.

He finiſhes his book with laying down the method of removing ſeveral of the moſt urgent ſymptoms in this diſeaſe. The principal of which are to be treated with remedies appropriated to ſuch diſeaſes when *idiopathetic*, joined with antiſcorbutics.

1674.

1674. *Franciſci Deleboe Sylvii opera medica.*

This celebrated author has little upon this diſeaſe but theory. He only obſerves *(prax. medic. append. tract.* 10. § 863. *&c.)* that there is no diſtemper in which volatile ſalts are ſo efficacious and neceſſary as in the ſcurvy; herbs abounding with theſe ſalts, *viz. cochlear. eryſim. naſturt. raphan.* and muſtard-ſeed, being its beſt remedies. In imitation of thoſe, for many years paſt he had given, with great ſucceſs in this diſtemper, volatile ſalts obtained from different parts of animals. Moreover, acids that are ſpirituous, either of the natural or chemical ſort, are likewiſe ſerviceable in the ſcurvy, *viz.* juice of oranges, ſorrel, *&c. ſp. ſal. vel nitr. dul.* For cure of the ſcorbutic ſpots obſerved after the epidemical conſtitution, of which he is there treating, he mixed theſe volatile ſalts and ſpirituous acids together; which proved very ſerviceable, and ſudorific.

1675. *The diſeaſe of* London; *or, A new diſcovery of the ſcurvy. By* Gideon Harvey.

He divides the diſeaſe into two great branches, *viz.* a *mouth-ſcurvy*, and *leg-ſcurvy*. To which a third may be added, which he calls the *joint-ſcurvy*. They are thus denominated from the parts affected. The immediate cauſe of the firſt, is an acid lymph in the ſtomach; the occaſional cauſes being the frequent uſe of mercury, a ſaline air, ſalt diet, brackiſh water

uſed for brewing of ale, gluttony, debauchery, &c. The ſecond, or leg-ſcurvy, he attributes to a cauſe oppoſite to that of an acid, *viz.* a lixivial alcalious ſalt. He terms it a *ſaponary ſtate of blood.* The occaſional cauſes of this are pretty much the ſame with the former, *viz.* ſalt air and food; the uſe of ſea-ſalt, diſtilled ſpirits, and tobacco. An acid ſcurvy, upon its long continuance, changes into a ſaponary ſcurvy; or is followed with ſwelling and ulcers of the legs, &c. He afterwards makes many other diſtinctions in this diſeaſe. For a preſervative againſt it, he recommends change of air, and wholſome, nouriſhing, eaſy-digeſted food. In the cure, bleeding is proper, and iſſues both for that and its prevention. In the mouth-ſcurvy, they are to be put in the left arm; in ſome caſes in the neck, or right arm; in the leg-ſcurvy, above the knee; in the joint-ſcurvy, more than one are to be made. Aloetic pills are amongſt the beſt preſervatives againſt this diſtemper. They are to be premiſed in the cure of a recent, or even inveterate ſcurvy: but at the ſame time are proper only in the acid kind; as the laxatives in the lixivial or ſaponary ſcurvy muſt be of the mildeſt ſort. The acid ſcurvy requires warmer medicines; the lixivial the more temperate, cooling, mucilaginous, &c. He concludes with the cure of a ſtomachic ſcurvy, hepatic, &c.

1681.

1681. *Abrahami Muntingii de vera antiquorum herba Britannica, ejuſdemque efficacia contra ſtomacacen ſeu ſcelotyrben, Friſiis et Batavis de Scheurbuyck, diſſertatio hiſtorico-medica.*

He pretends, after much labour, to have diſcovered the true *herba Britannica* of the ancients, which had been unknown to the world for many ages, *viz.* that celebrated plant which, according to *Pliny*'s account, cured the *Roman* army (ſee p. 294.). He would have it to be *hydrolapathum nigrum*, the great water-dock; and beſtows the moſt extraordinary encomiums upon it; giving inſtances of ſeveral remarkable cures performed by its uſe, in the ſcurvy.

1683. *Traité du ſcorbut, par L. Chameau.*

The ſcurvy is in a particular manner endemic with the *Engliſh*, as the author had obſerved during his reſidence for ſome time among them; and for their ſakes chiefly he publiſhed his book. He makes it to be a contagious diſſolution of the blood, by a very acrid ſubtile ſalt: confutes the diſtinctions made of the diſeaſe by Dr. *Willis*, and extols milk as the moſt excellent antiſcorbutic; accounting all warm and acrid medicines for the moſt part pernicious.

Une voyage aux Indes orientalis, ecrit par M. Dellon, M. D. Supplement, chap. 2.

Of the ſcurvy, called by the *French* the land evil.

This is the moſt dangerous and troubleſome of all the diſtempers incident in a long voyage, being contagious, and ſcarce ever to be cured at ſea. The ſymptoms firſt appear in the mouth and gums, which ſwell, grow black, and emit a very ill ſcent. Deep inciſions are requiſite in order to remove a conſiderable quantity of corrupted fleſh and matter, which not only looſens the teeth, but makes them fall out. The next ſymptoms that appear are certain black ſpots on the arms, legs, and thighs, and then over the body. The broader theſe ſpots are, and the nearer the heart, the more dangerous is the diſtemper. The corruption in the gums, and blotches over the body, are followed by a *nauſea*, lazineſs, fainting fits, pains in the head, arms, and legs, and laſt of all with a looſeneſs. There is ſeldom any fever; the pulſe in this malady declining very little from its natural ſtate.

For prevention he recommends that the ſhip be victualled with ſound wholſome proviſions; that ſhe be kept neat and clean, waſhed with ſea-water every day, and ſprinkled with vinegar twice or thrice a week. Each perſon on board ought to provide himſelf with juice of citrons, lemons, *ros ſolis*, and dried fruits, eſpecially prunes, and not to abſtain long from drinking. But if the body be already affected, then he propoſes firſt a mode-

moderate bleeding, a little gentle phyſic, and above all repeated clyſters, if there is not a ſcarcity of water on board. The gums are to be rubbed with a mixture of vinegar or juice of lemons with ſome ſalt, until they bleed. The blotches on the body are to be waſhed and rubbed with warm ſea-water until they ſmart: or (if it can be got) with the blood of a ſea hog, which has been found by experience to have a ſpecific quality againſt this evil. If in ſpite of all endeavours the heart becomes affected with the malignant vapours from the corrupted parts, recourſe muſt be had to cordials. From the firſt attack of the diſeaſe, the patient muſt abſtain from every thing ſalted. If he cannot have freſh proviſions, he muſt feed on rice, barley, and prunes, and drink wine mixed with water, which will be of greater ſervice to him than all the cordials in the ſhip. He concludes with telling us, that it is of great uſe to ſend the ſick on ſhore in hot weather or in warm countries; but if the ſhip comes to an anchor in a cold climate, the utmoſt care is to be taken not to expoſe them to a cold air. They are rather to be kept up cloſe and warm, ſweating being conducive to their cure, eſpecially if at the ſame time they are provided with a good diet of eaſy digeſtion, and good nouriſhment.

1684. *Nauwkeurige verhandelinge van de ſcheurbuik en des ſelfs toevallen*: or, A curious

treatiſe on the ſcurvy, and its ſymptoms. By *Stephen Blancard. Ejuſdem praxeos medicæ cap.* 15. *de ſcorbuto.*

Though *Willis* and *Charleton* have written the beſt upon the ſcurvy, they have not yet ſolved all the difficulties that occur in it; which this author thinks he does by his theory of fermentation, founded upon the *Carteſian* principles. The malady proceeds from a thickneſs of blood. Of this there are two kinds, *viz.* a cold and pituitous viſcidity; or there may be a heat and an acidity in that fluid: hence the diſeaſe is properly divided into a *hot* and *cold ſcurvy*. In the firſt ſpecies, whatever incides and attenuates viſcid pituitous humours, ſuch as the warm aromatics and ſpices; in the other (or acid ſcurvy) the *teſtaceous* powders, and all other abſorbents; fixed, volatile, and alcaline ſalts; chalybeats, but particularly drinking of tea and coffee, are the proper remedies. Bleeding is of no uſe. Vomits and purgatives are ſometimes neceſſary. All acids, viſcid and ſalt foods, are pernicious.

1684. *Jo. Dolæi medicinæ theoretico-practicæ encyclopædiæ lib.* 3. *cap.* 12. *de ſcorbuto.*

The ſcurvy is a diſeaſe nearly allied to the hypochondriac affection, being an acid dyſcraſy of the blood. He pretends to cure all ſcurvies in twelve days, by mercury dulcified in a particular manner.

1685. *Michaelis Ettmulleri collegii practici de morbis humani corporis part. 2. caput ultimum, exhibens duos affectus complicatiſſimos; nempe, malum hypochondriacum, et ſcorbutum.*

He accounts the ſcurvy the higheſt degree of the hypochondriac diſeaſe. All the ſymptoms of this latter occur in it, beſides many more. He has nothing new, all he ſays being tranſcribed from other authors; but confounds the two diſeaſes together, ſo as to make ſteel, and moſt other remedies proper in the hypochondriac diſeaſe, uſeful in the ſcurvy. He obſerves, that mercury is extremely pernicious in the ſcurvy; and ſo much dreaded in *Holland*, that even in venereal caſes, they were afraid to uſe it, on account of their ſcorbutic conſtitutions. *Dutch* ſeamen carry to ſea muſtard-ſeed, which both preſerves them from the diſeaſe, and cures it. In winter, when the antiſcorbutic plants cannot be procured, a compoſition with muſtard-ſeed is to be preſcribed. *Phytolog. p.* 98. *Vid. Sinap.*

1685. *Thomæ Sydenham opera univerſa.*

The author has no where treated expreſſly of this diſeaſe, but in a poſthumous work aſcribed to him, under the title of *Proceſſus integri in morbis ferè omnibus curandis.* There the ſcurvy is ſaid to be accompanied with, 1. ſpontaneous laſſitude; 2. heavineſs; 3. difficulty of breathing, eſpecially after exerciſe; 4. rottenneſs of the gums; 5. fœtid breath; 6. frequent bleeding at the noſe; 7. difficulty of walk-

walking; 8. a ſwelling ſometimes, at other times a waſting of the legs; on which ſpots always appear, that are either livid, or of a leaden, yellow, or purple colour; 9. a ſallow complexion. For cure, eight ounces of blood are to be taken from the arm, provided there be no ſign of a dropſy; next morning a purging potion given, and repeated twice, at the interval of three days betwixt each doſe. On the intermediate days the following medicines are to be uſed, and continued for a month or two. ℞ *Conſ. cochlear. hort. unc.* ii. *conſ. lujulæ. unc.* i. *p. ari comp. dr.* vi. *ſyr. aurantior. q. ſ. F. elect.* Of this the quantity of a large nutmeg is to be taken three times a-day, with ſix ſpoonfuls of the *aq. raphan. comp.* or *aq. cochlear. recent.* The patient is to have for common drink, an infuſion of horſe-raddiſh, ſcurvygraſs, raiſins, and oranges, in ſmall beer or in white wine. The above courſe is likewiſe beneficial in the ſcorbutic or hyſteric rheumatiſm, bleeding and purging excepted. But the more genuine ſentiments of this candid author are to be found in his other works.

Cap. 4. *de febribus continuis, ann.* 1661, 62, 63, 64, he obſerves, that the two great ſubterfuges of ignorant phyſicians, were malignity and the ſcurvy; which they blamed for diſorders and ſymptoms often owing to their own ill management. Thus, whatever bad and irregular ſymptoms have been brought on in fevers, perhaps by their unſeaſonable evacuations, theſe they aſcribe to the

the malignity of the diſeaſe; but if the long continuance of the diſtemper ſhould wipe off this aſperſion of malignity, whatever afterwards obſtructs the cure muſt be the ſcurvy; both of which are blamed without reaſon.

Sect. 6. *cap.* 5. *de rheumatiſmo.* To deliver my ſentiments freely, though I do not at all doubt that the ſcurvy is to be met with in theſe northern countries, yet I am perſuaded it is not ſo frequent as generally ſuppoſed. For moſt of thoſe diſorders we term *ſcorbutic*, are the effects of approaching ills not yet formed into diſeaſes, or the relics of ſome diſeaſe imperfectly cured. Thus, for inſtance, where a matter ſuited to produce the gout is newly generated, there appear various ſymptoms, which occaſion us to ſuſpect the ſcurvy; till the formation and actual appearance of the gout remove all doubt concerning the diſtemper. And in the ſame manner, many ſymptoms aſcribed to the ſcurvy afflict gouty people after the fit is over, eſpecially if it has been improperly treated. And this is to be underſtood, not only of the gout, but alſo of the dropſy. The proverb is, That where the ſcurvy ends, there the dropſy begins; which is to be underſtood in this ſenſe, that, upon the appearance of the dropſy, the preconceived opinion of the ſcurvy falls to the ground. And the ſame may be ſaid of ſeveral other chronic diſeaſes that are but forming, and others that are not totally cured. He however thinks, there is a ſpecies of rheumatiſm near

near akin to the ſcurvy in its capital ſymptoms, and which requires the ſame method of cure. The pains ſhift from one place to another; rarely occaſion a ſwelling; there is no fever; but it is attended with irregular ſymptoms; ſuch eſpecially as have taken much of the *cort. peruv.* are ſubject to it. Though it is otherwiſe a very tedious and chronic diſeaſe, yet it may be effectually cured by the uſe of the antiſcorbutic electuary before-mentioned, and a water diſtilled from ſcurvygraſs, brooklime, creſſes, &c.

1694. *Martini Liſter tractatus de quibuſdam morbis chronicis exercitatio* 5. *de ſcorbuto.*

He treats of the ſcurvy next to the venereal diſeaſe, becauſe they are nearly allied; having ſo many ſymptoms common to both, that they are not eaſily diſtinguiſhed from each other, but by an experienced phyſician. The ſcurvy has not been expreſsly treated of by the ancients, as being in their time endemic only in a remote corner of the world little known to them. *Eugalenus* was the firſt who accurately deſcribed this diſeaſe. It was formerly confined to *Flanders*; but has acquired great ſtrength ſince our navigation to the *Indies*, being now univerſal, and common to ſeamen of every nation. He aſcribes it to the uſe of ſalt food, old ſaltiſh cheeſe, and the like; or it may be occaſioned by ale made of brackiſh water. He obſerves the brewers

brewers have a bad cuſtom of adding ſalt and quick-lime to their malt-liquors; which fines and preſerves them without hops. He fancies the ſalt ſea-air greatly productive of this malady; as he had been informed, that even ſaltiſh rains fell in hot countries. Notwithſtanding the great virtues aſcribed to ſea-ſalt by *Dioſcorides*, yet it is plain, that the antients apprehended ſome ill effects from it when crude, by their burning, waſhing, and drying of it. He afterwards very ingeniouſly accounts for all the ſymptoms of the ſcurvy enumerated by *Eugalenus*; which he ſuppoſes to proceed from the uſe of this ſalt, occaſioning a briniſh chyle, lymph, &c. and converting the whole humours of the body into a pickle. Juice of ſcurvygraſs, lemons, and oranges, all ſorts of fruits, and pot-herbs (the more acid the better) are excellent remedies; as alſo vinegar, and *ſp. vitriol.* He pretends to be the firſt who takes notice of fatal hæmorrhages ſometimes occurring in this diſeaſe, and gives ſome inſtances of them from his *adverſaria.*

1696. *Sea-diſeaſes; or, A treatiſe of their nature, cauſes, and cure. By* William Cockburn.

The ſcurvy being generated by the ſalt proviſions altogether unavoidable at ſea, makes one of the conſtant diſeaſes in navies. A fourth part of the ſeamen do not contract it directly, in declining from a ſtate of health,

but

but by being put too ſoon on the ſea-proviſions, after recovering from fevers, and other diſtempers. It attacks commonly the weak, lazy, and inactive. Refraining from the ſea-diet, and living upon green *trade* (as it is called) on ſhore, proves an abſolute cure. It is worthy obſervation, how ſuddenly and how perfectly they recover of this diſtemper by eating greens, *viz.* coleworts, carrots, cabbages, turnips, *&c.* Men put on ſhore in the moſt pitiful condition that can be imagined, are able in three or four days, by means of this food only, to walk ſeveral miles into the country. When Lord *Berkeley* commanded the fleet at *Torbay* in 1695, the author prevailed with his Lordſhip to erect tents for the ſick on ſhore. Above a hundred of the moſt afflicted ſcorbutic patients, perfect moving ſkeletons, hardly able to get out of their ſhips, were landed. They had freſh proviſions given them, with carrots, turnips, and other greens. In a week they were able to crawl about; and before the fleet ſailed, they returned healthy to their ſhips. He regrets, that this diſtemper had as yet been left without a remedy at ſea. If proper care was taken about their diet, ſeamen would not be ſo liable to it. He condemns the diviſion into a hot and cold ſcurvy, made by Dr. *Willis*. The firſt alone is properly the true and real ſcurvy, and the latter nothing elſe but the *melancholia hypochondriaca*. And upon this occaſion he obſerves the neceſſity of having proper

names and deſcriptions of diſeaſes; as the uſe of ambiguous terms is apt to miſlead, and to have fatal conſequences in the cure of them.

Archibaldi Pitcarnii element. medicinæ phyſico-mathematic. lib. 2. cap. 23. de ſcorbuto.

The reader muſt here be cautioned, that every thing in this poſthumous work is not to be aſcribed to *Pitcairn*. The ſymptoms of the ſcurvy are ſaid to be, a redneſs, itching, putrefaction, and bleeding of the gums; looſe teeth; ſpots on the legs, firſt red, then livid, and blackiſh; an unuſual laſſitude; a red ſandy ſediment in the urine, ſo that it appears lixivial; an unequal pulſe; wandering pains; toothachs; redneſs, or heat of the body; fœtid breath; fluxes with or without blood. The immediate cauſe is, a broken texture of the blood; and this diſſolution of that fluid may be occaſioned even by bleeding; which is by no means proper for ſcorbutic people. But he talks only of the hot ſcurvy, or what *Willis* terms the *ſulphureo-ſaline*; this being properly the diſeaſe, if we would diſtinguiſh it from the hypochondriac affection. He recommends milk, or a milk-diet, as the beſt cure. But if it does not ſucceed, or any thing forbids its uſe, then chalybeats are to be given, with the addition of aſtringents, and the fixed temperate antiſcorbutics, eſpecially if faintings, fluxes, or a difficulty of breathing, afflict the patient. In the

the wandering gout, or ſcorbutic pains, after gentle purging, *decoct. guajac. et ſarſaparill.* is to be adminiſtered; obſerving, that if theſe pains are attended with few or no other ſcorbutic ſymptoms, they are then to be deemed rheumatic. This may eaſily be diſcovered by their admitting of repeated and plentiful bleedings; which are ſo very hurtful in the ſcurvy. Next to a milk-diet, chalybeates, decoction of the woods, and *ſucc. antiſcorbutic*; nothing will prove ſo effectual as the transfuſion of the blood of a ſound animal into a ſcorbutic patient.

1708. *Hermanni Boerhaave aphoriſmi de cognoſcendis et curandis morbis. Aph.* 1148. *&c. de ſcorbuto.*

Beſides the common cauſes uſually aſſigned by authors as productive of the ſcurvy both at ſea and land, he, from *Sydenham*, adds that particular of having taken too great a quantity of the *cort. peruv.*; then deſcribes the ſymptoms peculiar to the malady in its beginning, progreſs, and more advanced ſtages, contained in the four following ſections.

Sect. 1. An unuſual lazineſs; an inclination to reſt; a ſpontaneous laſſitude; a general heavineſs; a pain of all the muſcles as after too great a fatigue, particularly in the legs and loins; an extreme difficulty in walking, eſpecially up or down a ſteep place; in the morning upon awaking, the limbs and muſcles feel as if wearied and bruiſed. *Sect.* 2. A diffi-

difficulty of breathing, panting, and almoſt ſuffocation, upon every little motion; a ſwelling of the legs, often diſappearing, and an inability to move them, from their weight; red, yellow, or purple ſpots; a pale tawny colour in the face; a beginning ſtench of the mouth; a ſwelling, pain, heat, and itching of the gums, which bleed upon the leaſt preſſure; bare and looſe teeth; pains of different ſorts wandering in all parts of the body, external as well as internal, occaſioning ſurpriſing anguiſh, reſembling pleuritic, ſtomachic, iliac, colic, nephritic, cyſtic, hepatic, and ſplenetic pains. Hæmorrhages occur in this ſtage, but ſlight. *Sect.* 3. A deadly ſtinking rottenneſs, inflammation, bleeding, and gangrene of the gums; looſe, yellow, black, and carious teeth; varicoſe veins under the tongue; hæmorrhages, frequently mortal, from under the ſkin, without any apparent wound; as alſo from the lips, ſtomach, liver, lungs, ſpleen, *pancreas*, noſe, *&c.*; ulcers of the worſt kind upon every part of the body, chiefly the legs, yielding to no remedies, of a gangrenous diſpoſition, and moſt fœtid ſmell; *ſcabies*; cruſts; a dry and gentle leproſy; violent, piercing, univerſal nocturnal pains; livid ſpots. *Sect.* 4. Fevers of many ſorts, hot, malignant, intermitting all manner of ways, vague, periodical, continued, occaſioning an atrophy; vomitings; *diarrhœa*; dyſenteries; ſevere ſtranguries; faintings; and an oppreſſion upon the *præ-*

cordia, often ſuddenly mortal; a dropſy; conſumption; convulſion; *tremor*; palſy; contraction of the ſinews; black ſpots; vomiting and purging of blood; putrefaction of the liver, ſpleen, *pancreas*, and meſentery.

He ſuppoſes the immediate cauſe of the diſtemper to be a ſingular ſtate of blood; in which one part of that fluid is too thick and viſcid; while, at the ſame time, the other part is too thin or diſſolved, ſaltiſh and acrid. Which latter, or its acrimony, is either of an acid or alcaline quality: a diſtinction here carefully to be remarked. Upon this hypotheſis he founds the following therapeutic rules, *viz.* That part of the humour which is too thick, viſcid, and ſtagnating, muſt be attenuated, rendered thinner, and put in motion; mean while, what is already too thin, is to be inſpiſſated, and the predominating acrimony corrected according to its different kind and ſpecies. Now, as a ſingular regard muſt be had at the ſame time to theſe ſo oppoſite intentions of cure, he thinks it the maſter-piece of art to cure the ſcurvy. And after obſerving that ſmart evacuations always exaſperate, and often render it incurable, he lays down the following proceſs, adapted to the different ſtages and ſymptoms, as diſtributed in the four claſſes or ſections.

In the firſt ſtage (ſee ſect. 1.) we are to begin with a gentle, attenuating, deobſtruent purgative, often repeated in a ſmall doſe; next, to proceed in the uſe of attenuants, and

what

what are called *digeſtive medicines (a)*; concluding with a long continued courſe of the milder ſpecifics, exhibited in almoſt any form. In the ſecond ſtage (ſect. 2.) all that has been mentioned is neceſſary, with the addition of the more acrid antiſcorbutics. Baths for the body and feet, prepared with antiſcorbutic ingredients; alſo hot, dry friction, and often blood-letting, for certain reaſons he mentions, are proper. According to the acrid thinneſs of the fluids, heat, or danger of a hæmorrhage; or, on the contrary, the viſcidity and inaction of the humours, paleneſs, coldneſs of the body, &c. the antiſcorbutics given, are to be moderately aſtringent, ſomewhat cooling, or hot or acrid. In the third ſpecies or ſtage (ſect. 3.) all the already preſcribed meaſures are to be uſed. The patient is alſo to take great quantities of ſoft antiſeptic, antiſcorbutic liquors, promoting for a conſiderable time gentle evacuations, by ſweat, urine, and ſtool. In the fourth ſtage or ſpecies, (ſect. 4.) the caſe is for the moſt part incurable; medicines are to be varied according to the different ſymptoms; ſometimes mercurials do ſervice, as likewiſe what was ordered for the third ſpecies.

He concludes the ſubject with obſerving, that, in order to a ſucceſsful cure of this diſeaſe, it is principally required to inveſtigate

(a) Vid. *Willis.* It is needleſs to give *Boerhaave*'s preſcriptions here, as almoſt all of them in his *Materia medica* are taken out of *Willis*; as is indeed his proceſs of cure.

the peculiar predominating acrimony in the humours: and as this acrimony may be either ſaline and muriatic, acid and auſtere, alcaline and fœtid, or rancid and oily; ſo it requires different and oppoſite cures; what is ſerviceable to one ſcorbutic patient, proving poiſonous to another. The name of the diſtemper is not ſo much to be ſtudied, but each particular ſpecies of it, according to the different kinds of acrimony above ſpecified, as if it was a diſtinct diſeaſe.

1712. *Jo. Henrici de Heucher cautiones in cognoſcendo curandoque ſcorbuto neceſſariæ.*

This pamphlet contains ſome of the moſt exceptionable doctrines of *Willis*, *Eugalenus*, *&c.* Of which the following may ſuffice as a ſpecimen. Mercury is very juſtly ſometimes recommended in the ſcurvy by *Boerhaave*, when it is accompanied with fevers of various kinds, vomiting, *diarrhœa*, dyſentery, violent ſtranguries, faintings, and anxieties, often mortal; dropſy; conſumption; convulſions; palſies; voiding of blood; putrefaction of the liver, ſpleen, *pancreas*, and meſentery.

1714. *A ſhort eſſay on the ſcurvy, in which the cauſes and cure of that diſeaſe are briefly ſtated and demonſtrated.*

Such perſons as have long languiſhed under a ſcorbutic habit, and have been diſappointed of their expectations from the uſe of ordi-

ordinary means, will find relief by having recourſe to the author's never-failing medicines. He obſerves there were great diſputes at that time concerning the doctrines of acid and alcali: ſome phyſicians believing this and other diſeaſes to proceed from an acidity, others from an alculency in the blood; and by theſe oppoſite parties, and from their diſputes about the cure, the poor patients ſuffered greatly, being very differently treated, according as they fell into the hands of one or other of the contending parties. The author ſuppoſes them both to be in the wrong.

1732. 1734. *An account of the ſcurvy at* Wiburg. *Communicated by Dr.* Abraham Nitzſch *to Dr.* Schulze. Commerc. literar. Norimb. ann. 1734, *p.* 162.

It may be proper, firſt, to obſerve, that the ſcurvy is here an endemic *lues*. But what drew particular attention to it this year, 1732, was the uncommon number of the afflicted, and of thoſe who died, together with its unuſual duration. It perſiſted in its ravage from the beginning of the year until the month of *Auguſt*, with ſuch remarkable violence, that I was ſent thither by expreſs orders in the month of *June*. I obſerved the appearances of the diſeaſe were not the ſame in all; but different in individuals, according to their conſtitution of body.

Thoſe who were of a lax habit, laboured under an œdematous ſwelling of the legs,

(rarely of the *abdomen*) yielding eaſily to the impreſſion of the finger, but often becoming harder upon the continuance of the malady. The *hypochondria* for the moſt part were tumid, the flexor tendons of the *tibia* always contracted, with livid ſpots on the legs, knees, thighs, and back. Theſe in plethoric habits, particularly upon the *tibia*, became often inflamed, attended with moſt acute pain, and quickneſs of the pulſe. Now and then the white of the eye was altogether bloody; and ſometimes the eye-lids were greatly ſwelled, being diſtended with extravaſated, ſtagnating blood. In ſome the ſpots were pretty large, eſpecially upon the thighs and back; in others they reſembled only flea-bites, and were accompanied with ſwelling of the legs, univerſal laſſitude, ſwelled, bleeding, and putrid gums; as alſo a pale wan countenance. Several were diſtreſſed with a great difficulty of breathing, moiſt cough, a *vertigo*, and faintings, moſt commonly when in an erect poſture; the latter often proved fatal to thoſe who had been long afflicted. The appetite from the beginning was ſomewhat impaired, often leaving the patient upon his being affected with *borborygmi* and *nauſea*, but returning upon the acceſſion of a *diarrhœa*. The feet, *ſcrotum*, and *abdomen*, were ſometimes greatly diſtended with a tranſparent watery ſwelling, and the ſkin inflamed. The gums having become a maſs of ſpungy fleſh, diſcharged, upon ſqueezing, a fœtid *ichor*; and

and the ſalivary glands were ſometimes ſo ſtuffed, as to acquire the hardneſs of a ſcirrhus, which could not be reſolved by any other means than by a natural and ſpontaneous ſalivation.

Perſons of a dry habit were afflicted with ſymptoms different from thoſe of repletion. They were every day more and more emaciated, and racked with violent ſhooting pains on the *tibia*, accompanied with a fever. The anguiſh did not fix in one place, but by ſhifting produced arthritic pains, colics, the ſpaſmodic aſthma, headachs, toothachs, and contractions. By the uſe of improper volatile medicines, the abdominal *viſcera*, the liver and ſpleen, became hard; upon which enſued either an *aſcites*, or an atrophy and *diarrhœa*, which conſtantly proved fatal. The gums were ſwelled and hard, painful to the touch, and often over-run with a cancerous ulceration.

In order to put a ſtop to this dreadful calamity, it was neceſſary that the treatment and remedies ſhould be ſuited to the habit and conſtitution of the patient. I therefore preſcribed for thoſe who laboured under the ſlow or cold ſcurvy, a decoction of *ſum. pin. bacc. juniper.* and *trifol. fibrin.* Where there was reaſon to apprehend a ſwelling of the abdominal *viſcera*, I gave the neutral ſalts, and alcaline tinctures: but where there was a fever, and inflammation on the *tibia*, the ſaline nitrous abſorbents internally, and exter-

nally *ſp. vin. camp.* with ſaffron. For the ſtiff tendons I uſed *ung. nervin. cum ol. philoſop. &c.* and baths; for the ſwelled, bleeding gums, *ung. Ægyptiac. mel. roſ.* and *ſpir. cochlear.* or *tinct. gum. lacc.* and *ſp. coch.* or common water acidulated with *ſp. vitriol.* The air was corrected three times a-day by a fume of juniper wood and berries. The *paracenteſis* often ſucceeded with thoſe who had the *aſcites*, when free from a fever, and an œdematous ſwelling of the abdomen. It reſtored them to perfect health; as did alſo ſcarifications upon the calf of the leg and *ſcrotum*, when there appeared a tenſe watery ſwelling upon theſe parts; provided proper internals were adminiſtered, *viz.* aperient, diuretic, and ſtrengthening medicines, ſuch as *tinct. tartar. mart. antimon.* neutral ſalts, *&c.* If there was any danger of a gangrene from theſe ſcarifications, as often happened, it was ſtopped by nervous and antiſeptic applications.

In the painful ſcurvy, upon account of the dry habit of body, medicines heating and exagitating the blood, formerly given, were laid aſide, and emollient remedies were preſcribed, *viz.* a decoction either of barley or oats; or of *raſur. cornu cervi*, with *rad. ſcorzon. ſummit. milleſol. et flor. chamæmel.*: as alſo oily medicines, *viz. amygd. d. et ſperm. ceti*; which often miraculouſly allayed arthritic pains, and the oppreſſive complaints in the breaſt. Antiſpaſmodics were ſometimes given, *viz. nitr. depurat. cinnabar. antimonii*, epileptic powders,

ders, *&c.* and occaſionally abſorbents, and the *teſtaceous* powders. When the *hypochondriaca* were obſtructed, *rad. cichor. vel tarax.* was added to the decoction; and for the ſwelling, heat, and pain of the gums, the pulp of citron proved an excellent and agreeable remedy. By this treatment, and the bleſſing of Heaven, I put a ſtop to the calamity; inſomuch that the number of the diſeaſed, and of thoſe who died, diminiſhed every day, and in the ſpace of a month it quite diſappeared.

This preſent year, the *Cuiraſſiers* lately come from the *Ukraine* to *Peterſburg*, have furniſhed me with ſeveral farther obſervations upon this diſeaſe. The ſymptoms were as uſual. It was always a ſalutary ſign when the ſpots appearing continued out. In two caſes their ſudden diſappearance proved fatal. Beſides the uſe of the attenuating decoction before-mentioned of *ſum. pin.* I found it neceſſary, every ſecond or third day, to give a half-ſpoonful of a mixture prepared of *gum ammoniac. el. propriet. ana p. æ.* diluted with *ſp. vin. tartariſat.*; or *pulv. ſalin. dr.* ſs. *cum diagrid. gran.* iv. *vel* v.: which had ſo remarkable good effects, that though many were cachectic, yet none became dropſical. Prudent blood-letting near the decline of the diſeaſe, when the pulſe was ſtrong, evidently aſſiſted in the cure. I can ſolemnly affirm it was followed with an increaſe of ſtrength, a perfect relaxation of the tendons, which had

before

before been attempted to no purpoſe by warm ſteams and baths, and a more ſpeedy recovery. The diſeaſe left us in *May*, having acquired its virulence in *February*.

1734. *Obſervationes circa ſcorbutum; ejuſque indolem, cauſas, ſigna, et curam. Auctore Joanne Fred. Bachſtrom.*

From want of proper attention to the hiſtory of the ſcurvy, its cauſes have been generally, though wrongfully, ſuppoſed to be, cold in northern climates, ſea-air, the uſe of ſalt meats, &c. whereas this evil is ſolely owing to a total abſtinence from freſh vegetable food, and greens; which is alone the true primary cauſe of the diſeaſe. And where perſons, either through neglect or neceſſity, do refrain for a conſiderable time from eating the freſh fruits of the earth, and greens, no age, no climate or ſoil, are exempted from its attack. Other ſecondary cauſes may likewiſe concur: but recent vegetables are found alone effectual to preſerve the body from this malady; and moſt ſpeedily to cure it, even in a few days, when the caſe is not rendered deſperate by the patient's being dropſical or conſumptive. All which is founded on the following obſervations.

He remarks, that the ſcurvy is moſt frequent among northern nations, and in the coldeſt countries. There it is not confined to the ſea alone, but rages with great violence at land, afflicting both natives and foreigners; of

of which the poor ſeamen left to winter in *Greenland*, who were all cut off by this diſtemper, afford a memorable inſtance. But the opinion of its being produced there by cold, he thinks irreconcileable with the daily experience of its attacking ſeamen in their voyage to the *Indies*, even when under the torrid zone.

That it is not peculiar to the ſea, the following hiſtories ſufficiently evince. During the late ſiege of *Thorn*, above 5 or 6000 of the garriſon, beſides a great number of the inhabitants, died of this diſtemper; the ſurrender of the town being more owing to the havock made by this dreadful calamity, than to the bravery of the beſiegers. Upon which he obſerves, that, allowing this diſeaſe to be moſt frequent among the northern nations in winter, yet the ſiege of that place was carried on in the heat of ſummer; and the *Swedes*, the beſiegers, a northern nation, kept altogether free from the ſcurvy. The miſchief firſt attacked chiefly the blockaded *Saxon* garriſon. They being almoſt all cut off, the inhabitants were at laſt obliged to do duty upon the walls; of whom it alſo deſtroyed a great number. But no ſooner was the ſiege raiſed, and the gates of the town open for the admiſſion of vegetables and greens from the country, but the mortality quickly ceaſed, and the diſeaſe at once diſappeared.

In the end of the laſt war with the *Turks*, when the Imperial army wintered in *Hungary*,

gary, the country having been laid waſte about *Tameſwaer*, by the calamities of the preceding war, many thouſands of the common ſoldiers (but not one officer, as having different diet) were cut off by the ſcurvy. The phyſician to that army employed his utmoſt ſkill, and the moſt approved antiſcorbutic remedies. Notwithſtanding which, the mortality went on increaſing during the winter. Unacquainted with the diſeaſe, or rather its remedy, he demanded a conſultation of the college of phyſicians at *Vienna*; whoſe preſcriptions and advice were of no ſervice. The diſeaſe ſtill perſiſted with increaſing virulence until the ſpring, that the earth was covered with greens and vegetables. And the phyſician now rejoiced as much in having found out the true cauſe of this evil, as before he had regretted his unhappy diſappointment in the removal of ſo general and dreadful a calamity.

As ſome are of opinion, that warm and inland countries are altogether free from this diſtemper, he gives an account from an officer of a *German* garriſon in *Italy*, many of whom were cut off by it at a great diſtance from the ſea. The officer himſelf, an *Italian*, was miſerably afflicted, and given over by his phyſicians, who were altogether ignorant of his caſe; when a *German* ſurgeon, by lucky accident paſſing that way, reſcued him from the jaws of death. He cured him in a few days, to the ſurpriſe of his phyſicians, by ordering

dering his ſervant to the fields to ſupply him with green vegetables, eſpecially the *ſiſymbrium*, which grew thereabouts very plentifully.

The following relation is no leſs curious. A ſailor in the *Greenland* ſhips was ſo overrun and diſabled with the ſcurvy, that his companions put him into a boat, and ſent him on ſhore; leaving him there to periſh, without the leaſt expectation of a recovery. The poor wretch had quite loſt the uſe of his limbs; he could only crawl about on the ground. This he found covered with a plant, which he, continually graſing like a beaſt of the field, plucked up with his teeth. In a ſhort time he was by this means perfectly recovered; and, upon his returning home, it was found to be the herb ſcurvygraſs.

From all which the author concludes, that as abſtinence from recent vegetables is altogether and ſolely the cauſe of the diſtemper, ſo theſe alone are its effectual remedies. Accordingly he beſtows the epithet of *antiſcorbutic* on all of that claſs which are wholſome and eatable; obſerving Nature every where affords a ſupply of remedies, even in *Greenland*, and the moſt frozen countries. There no ſooner the ſnow melts from the rivers, but their borders are covered with brooklime, creſſes, and ſcurvygraſs, in ample prodigality. There Nature dictates to thoſe barbarous nations, that what ſhe thus bleſſes them with in ſuch bounteous profuſion, affords preſent

health and relief in their malady. This all phyſicians acquainted with the nature of the ſcurvy, muſt be likewiſe ſenſible of. The moſt common herbs and freſh fruits excel the moſt pompous pharmaceutical preparations, eſpecially thoſe of the animal and mineral kinds. He divides antiſcorbutics into three claſſes. The firſt contains the common pot-herbs, and all plants of an inſipid, or rather ſweetiſh taſte, fruits of trees, *&c.* of this quality; and when in want of thoſe, even graſs itſelf may be eat. In the ſecond claſs, he ranks all vegetables, roots, fruits, berries, *&c.* that are of a ſubacid or acid taſte: and theſe being of a middling quality betwixt the inſipid plants of the firſt claſs, and the ſtronger bitters he includes in the third, they will prove more effectual than the firſt, without being liable to ſome inconveniencies which may attend thoſe of the third claſs. In this laſt he comprehends all freſh herbs, roots, and fruits, of a bitter and ſtrong taſte, of the nature of ſcurvygraſs, creſſes, *&c.* Theſe laſt are with caution to be preſcribed at firſt, or in great quantities. For prevention, he recommends living much upon green vegetables, when they can be got; otherwiſe, upon preſerved fruits, herbs, roots, *&c.* He adviſes ſeamen when at land to be more careful of laying up a ſtore of greens than of fleſh; and, in caſe of neceſſity, would have them when at ſea to make trial of the ſea-weeds that grow upon the ſhip's bottom; being perſuaded,

ſuaded, that the great phyſician of nature had not left them without a remedy, although he had never heard of its being tried *(b)*. After a long abſtinence from vegetables, the diſeaſed are to begin with the milder antiſcorbutics, proceeding by degrees to thoſe of a ſtronger nature. In examining the mineral and foſſil remedies, which have been ſo much recommended in the ſcurvy, he obſerves of nitre, that as it is a copious ingredient in moſt plants, perhaps it may be ſerviceable; but, otherwiſe, all thoſe claſſes are to be avoided. He condems the uſe of ſteel, mercury, and alum; as likewiſe ſulphureous and vitriolic medicines, eſpecially the ſtrong acid of vitriol, which ſome account a ſpecific in the ſcurvy; but they will find themſelves diſappointed.

1734. *Parerga medica conſcripta à Damiano Sinopeo.*

In *Cronſtadt*, which is a low marſhy iſland, and where the weather for the moſt part is cold, rainy, and cloudy, the ſcurvy is an endemic and common diſeaſe. It is moſt frequent and violent in the beginning of ſpring; but much rarer and milder during the reſt of the ſeaſons, unleſs the weather proves cold and wet: and for the ſame reaſon it is more frequent ſome years than others.

The ſymptoms are, a putrid ſwelling of the gums, laſſitude, and a remarkable pain

(b) I am informed they were tried in Lord *Anſon*'s ſhip.

and weakneſs of the legs; ſwelling of the feet and knees; contraction of the tendons; a cachectic, and, as it were, anaſarcous habit of body, with a dark yellowiſh hue; coſtiveneſs, and a thick lateritious urine. After thoſe appearances, enſue pain, and even contractions of the upper extremities; livid ſpots of different ſizes; pains in the ſhoulders, and ſmall of the back. Theſe latter prove very violent in ſuch as are tainted with the venereal poiſon. Few die of this diſtemper; for the moſt part only thoſe who have become conſumptive or dropſical.

The learned author, in his very elegant and accurate account of the diſeaſes which prevailed at *Cronſtadt*, from the year 1730 to the end of 1733, obſerves, that when he firſt came there, *ann.* 1730, true pleuriſies, peripneumonies, *&c.* reigned. Thoſe acute fevers ceaſed in the ſpring; and an unuſual dry and warm ſummer ſucceeding, there were few acute diſeaſes, and even old chronical ailments became more tolerable. A dry and cold autumn, with a ſeaſonable ſnowy winter, gave riſe to but very few acute diſeaſes; till about the beginning of *February*, when a catarrhal fever commenced. The weather proved then very unſettled; the ſpring was cold and moiſt; the ſummer much the ſame, with little heat. This catarrhal fever raged about twenty days. Upon its remiſſion, pleuriſies, peripneumonies, rheumatiſms, *&c.* took place; and an intermitting fever, which continued

tinued the whole ſpring; as alſo the ſcurvy. This laſt made its appearance in the month of *March* 1731, ſeizing at firſt only a few; but in a ſhort time the number of ſcorbutic patients was equal to thoſe in fevers; and afterwards exceeded them, the fevers then ceaſing. It began with a bloated ſallow complexion, livid ſpots, *&c.* and was accompanied with ſuch ſymptoms as have been before mentioned. In the months of *April* and *May* it raged with uncommon violence, and continued almoſt till the middle of *July*; when it was abated by the heat of the ſeaſon. Some patients became anaſarcous, or dropſical; others phthiſical. Some laboured under the moſt violent colics, with obſtinate contraction of the belly; others were ſeized with a *ſphacelus* of the gums and *fauces*, ſcorbutic tumours, *&c.* Soft livid ſwellings aroſe upon the body: they were judged to be full of matter; but, upon opening them, nothing was diſcharged but a blackiſh diſſolved blood: the ulcer was ſurrounded by a fungous rotten fleſh, whoſe baſis ſeemed very deep, and bled upon the gentleſt touch *(c)*.

Although the ſcurvy was a diſtemper bad enough of itſelf, it was, however, often rendered worſe by being complicated with other intercurrent diſeaſes, *viz.* fevers, and rheumatiſms, but eſpecially the intermitting fever.

(c) A very accurate deſcription of ſcorbutic tumours and ulcers. Compare it with *Poupart*'s, p. 258. Dr. *Huxham*'s, p. 55. and other obſervations, p. 123. *&c.*

All who recovered from this laſt, became ſcorbutic. There was ſcarce any perſon, either in the hoſpital or town, who laboured under even a chronic diſeaſe, who was not more or leſs affected by the ſcurvy. Hence all diſeaſes whatever became more troubleſome and obſtinate this ſpring.

The ſcurvy having entirely ceaſed in *July*, a few mild fevers took place the reſt of the ſummer, and autumn.

In the beginning of the year 1732 a gentle vernal fever prevailed; ſoon after, the *pleuritis ſpuria* was more frequent; and, laſtly, the ſcurvy. All thoſe diſeaſes entirely ceaſed upon the appearance of a warm and dry ſummer. This continued but for a month, when the weather changed to rain and cold; which induced a univerſal diſtemper, *viz.* a catarrh, with cough, *&c.* It ſpread itſelf over all the countries about, raged much at *Peterſburg*, and affected even thoſe who were at ſea.

After many curious obſervations foreign to our purpoſe, he remarks, that the vernal ſcurvy, *ann.* 1733, was milder than any of the former; but, nevertheleſs, contrary to cuſtom, continued during the whole ſummer and autumn, the ſeaſons proving wet and uncomfortable. He has one ſingular obſervation, That the *ſcabies* and *purpura* prevailed at the ſame time with the ſcurvy. The remedies uſed, were, eſſences and conſerves of the antiſcorbutic plants, hot aromatics, bitters,

ters. *&c.* The author gave many medicines; but, unluckily, few or none that were truly antiſcorbutic.

1737. 1720. *Geo. Henrici Karmeri diſſertatio epiſtolica de ſcorbuto.*

The caſe of the Imperial troops in Hungary; *tranſmitted to the college of phyſicians at* Vienna, *by the author.*

The calamity which afflicts the Imperial troops, is not that ſpecies of ſcurvy deſcribed by *Eugalenus* and others. It differs from it in three particulars.

1ſt, It is not infectious. No officers are ſeized with it; and only the regiments of ſuch nations as uſe too groſs diet. *2dly*, It is not a primary, but a ſecondary diſeaſe. It attacks only thoſe who have recovered from fevers, and eſpecially ſuch as have had frequent relapſes. *3dly*, It is not attended with the many ſymptoms deſcribed by thoſe authors. The appearances in all are conſtantly uniform, and as follow.

In the firſt ſtage the gums are ſwelled; they are apt to bleed, and ſtained with livid ſpots. Upon which enſue great putrefaction, a moſt offenſive ſtench from the mouth, and a falling out of the teeth.

In the ſecond ſtage or degree of the malady, there is for the moſt part a contraction of the joint of the knee, ſo that the patient cannot extend his leg. Violent ſhooting pains

are felt in this joint, as likewiſe often on the other joints of the body. The contracted knees are alſo ſwelled, with incredible pain and *rigor* of the tendons; and the ſkin is covered with bluiſh extravaſations, interſperſed with ſmall miliary eruptions. In one night's time the eyes, and even other parts of the body, are covered with large livid ſpots, as if the patient had received ſeveral bruiſes. Theſe ſpots are altogether without pain. The muſcles of the legs, thighs, and even cheeks, become greatly ſwelled, and hard, nay, altogether indurated. But thoſe ſwellings, as alſo the large *ecchymoſes*, never ſuppurate. The pulſe is quick, ſmall, and hard; the urine red, with a thick unequal ſediment.

If the patient ſtill continues the uſe of improper diet, as is the caſe of many of our common ſoldiers, from want of neceſſaries and conveniencies in *Hungary*, the malady advances to its third ſtage. The gums become prodigiouſly ſwelled, together with the cheeks. A gangrene, or *caries* of the jaw, enſues; both which prove incurable. The difficulty of breathing is ſo great, that the patients not only faint away upon the ſlighteſt motion of the body; but frequently, when walking about, drop down ſuddenly dead. They generally complain exceſſively of this *dyſpnæa*, a few days before death, though they have neither cough nor ſpitting. All the ſpecies of dropſies, and œdematous ſwellings on the body, accompany the advanced ſtages

of

of this calamity; in ſo much that, by lying with the head in a declining poſture, the face in half an hour becomes ſo ſwelled, that the perſon cannot open his eyes. Such ſwellings often diſappear and return. They are ſubject to profuſe hæmorrhages from the noſe; and, in theſe deplorable circumſtances, to a *diarrhæa* or dyſentery, which often cloſes the ſcene. In the beginning of the diſeaſe, the appetite and thirſt are natural; but towards the cloſe of the malady, the appetite failed, and the thirſt increaſed. Of the many other ſymptoms deſcribed in this diſeaſe by authors, none elſe occur but thoſe alone which have been mentioned.

This is the fatal miſchief which deſtroys many miſerable wretches in *Hungary*, at fartheſt in the ſpace of two or three months, but for the moſt part in three or four weeks. If the patient ſurvives till the ſummer, he either perfectly recovers, or remains incurably contracted.

The remote cauſes of this evil are, relapſes after tedious fevers, which have been epidemic in the country; the moiſt and marſhy ſoil; but eſpecially groſs and viſcid diet, *viz.* fleſh, and the groſſer farines, coarſe heavy bread, and pudding (or a food called *rollatſchen*) eaten by the *Bohemians* more than by all others. They are almoſt the only nation affected. One thing remarkable is, that this diſeaſe does not appear in *Hungary* in ſum-

mer, autumn, nor in winter; but every year in the beginning of ſpring.

I come now to what has been attempted, both by myſelf and others, towards the cure: and muſt firſt obſerve, that 400 of the troops near *Belgrade* having taken mercury without my advice, the dreaful conſequence was, they all died in a ſalivation! Shunning therefore that fatal drug, I generally premiſed a vomit, on purpoſe to clear the firſt paſſages, and ſo to procure a more certain entrance of the ſpecific antiſcorbutics, with their full virtues, into the blood. I then adminiſtered, in every form that could be thought of, or that has been recommended by authors, the moſt approved antiſcorbutic remedies, *viz. Radices, raphan. taraxic. ari, aſari, gentianæ, angelic. helen. acori, ſarſaparill. chinæ, &c. Folia, et herbæ aridæ,* (for here the green freſh plants cannot be procured) *becabung. naſturt. trifol. fib. cochlear. acetoſ. ſcordii, rutæ murar. roſmar. ſalv. cent. min. ſedi minim. &c. Ligna guajac. ſaſſaphras, &c. Strobili pin. corticis winteran. guajac. aurantior. Baccæ juniperi, lauri, &c.* I have alſo given ſalts of every kind, volatile and fixed, particularly *ſal vol. cornu cervi, arcan. duplicat. ſal tartar. fix. ſal ammoniac. crud. cremor tartar.* with chalybeates of all ſorts. *Spir. ſal. ammon. ſal. vol. ol. ſpir. et tinct. tartari, tinct. bezoard. ſpir. cochlear. &c.* In place of the juice of citrons and lemons, which cannot be got here, I gave *acet. theriac.* or vinegar, in which many of the before-

before-mentioned ingredients, particularly the celebrated *rad. armoraciæ*, were infuſed. I was not ſparing of the moſt coſtly medicines, *tinct. mart. antimonii, lunæ helvet. &c.* But, alas, all was in vain!

In a word, there is nothing that has been recommended by the beſt claſſical and ſtandard authors *(d)*, which I have not made trial of, except the juices of the freſh green plants, and their quinteſſence recommended by *May (e)*. It is not in my power to procure thoſe herbs, or their juices; becauſe, as I obſerved before, they do not grow in this country. We have nothing here but *eruca lutea* (wild rocket) and *rapiſtrum arvorum* (wild muſtard); but even of theſe, who can gather a ſufficient quantity for ſuch a number of the diſtreſſed? Milk, were it proper, cannot be purchaſed for ſo great a multitude of people: and the ſame may be ſaid of whey.

After having met with ſuch melancholy diſappointments, in the trial of what has been recommended by others, and whatever I could think of myſelf; reflecting that tedious fevers had generally preceded, and that a ſlow fever ſtill accompanied the diſeaſe, I fell upon the *cort. peruv.* given in the form either of electuary or infuſion. By this, in a few days, I cured ſixty ſoldiers in the regiment

(d) Here he enumerates ſixteen modern writers on the ſcurvy, of the greateſt repute, with an *&c.*

(e) A medicine of Dr. *Michael*'s. Vid. p. 142. The author afterwards obſerves, that it was of no efficacy.

of *Bagnan*, who were in the ſecond ſtage of the diſeaſe. It is now two years ago; but at the ſame time they had a proper diet, and ſuch food as cannot at this time be procured. I have already tried *ſem. ſinap.* Muſtard-ſeed is ſaid to have ſaved the beſieged garriſon of *Rochelle*, when over-run with this diſeaſe; but here, like all other remedies, it is of no efficacy. I need not not ſay any thing of topical applications: as ſuch powerful internal helps do not avail, little can be expected from them. I ſhall only obſerve, that different regiments have uſed the baths of the country; but all to no purpoſe.

I therefore humbly requeſt, that if any of you, gentlemen, are poſſeſſed of an *arcanum*, or a remedy able to overcome this *Herculean* diſeaſe, you will favour me with it; as alſo your beſt advice. Perhaps ſome of you may have the knowledge of the fixed mercury boaſted of by *Dolæus* and *Helmont*, which will cure the ſcurvy without the aid of ſuch a proper diet as cannot at this time be procured for the wretched in *Hungary*.

A copy of this caſe of the troops was delivered to each member of the college at *Vienna*; and, by order of the Dean of Faculty, all were deſired in three days time to give in their opinion in writing. Which produced the following anſwer.

We have received your very accurate account of the ſcurvy, which commits ſuch dreadful

dreadful havock among the Imperial troops during the ſpring in *Hungary*; and it is ordered directly to be printed. After having had all circumſtances duly weighed by the moſt experienced of our faculty, the firſt rule we preſcribe, is, great attention to the non-naturals. Without this, the moſt heroic medicines may fail; but when a proper regard is had to theſe, ſimple remedies will do great things. As the ſources of this calamity ſeem to be impure air, and an unwholſome marſhy ſoil (evils not eaſily remedied); the troops muſt often ſhift their quarters, and be removed into better air. When in unhealthful ſtations, they are, by way of prevention, to uſe the ſmoak of tobacco, juniper, *&c.* They ſhould have always dry ſtraw to lay upon the ground; and as wholſome food as can be provided for them.

As to the cure (after noting with infamy thoſe who have recommended a mercurial ſalivation in this diſeaſe, as more properly deſtroyers of the human race than phyſicians) we would adviſe a gentle vomit of *ipecacuan* to be premiſed; and afterwards the approved antiſcorbutics of the vegetable kind to be given, *viz. cochlear. becabung. naſturt. fumar. flor. hyperic. trifol. fibrin. &c.* The juice, extract, tincture, decoction, *&c.* of theſe, may be adminiſtered either in whey or broth. As you have none of thoſe plants, we have ſent you their ſeeds to be ſown in the country; and until ſuch time as they grow up, have

ſupplied

ſupplied you with a quantity of the dried herbs, and of their inſpiſſated juice. Beſides which, we would recommend two remedies of great and experienced virtues *(f)*.

The author's farther explanations and experience.

The ſcurvy attacked only thoſe who, after frequent relapſes, and recovery from fevers, uſed a crude viſcid diet. Hence not one officer was ſeized with it; nor even any of the common men among the dragoons, as their pay and living were better. It was always accompanied with remains of the fever in the pulſe and urine. Both in *Hungary* and in *Piedmont*, where the troops were lately afflicted with it, the natives were at the ſame time altogether free from it. The diſeaſe occurs oftentimes in *Germany*, among ſuch people as live altogether on the boiled pulſes, without eating any green vegetables or ſummer-fruits. In the hoſpital at *Dreſden* there are ſcorbutic patients every year. It is a fatal miſchief often in beſieged towns, as alſo to ſeamen in long voyages. It is, however, quickly cured in cold countries; as in *Greenland*, by ſcurvygraſs; and in warmer countries, by the juice of oranges. *Dutch* ſailors effectually prevent this diſtreſs, by eating

(f) The one a paſte of *pulv. rad. chin. ſarſaparil. et hordei*, from *Heſerus*; the other, a diſtilled antiſcorbutic water, from *Zwingerus*. The author afterwards obſerves they were of no efficacy.

once or twick a-week pickled cabbage. When blood was injudiciouſly drawn for relief of the ſcorbutic *dyſpnœa*, there was no ſeparation of the *ſerum*: it was covered a-top with a white greaſy film. The contraction occurs in no other joint but the knee. The diſeaſe conſtantly begins, and regularly advances, in the manner as deſcribed in the relation tranſmitted to the college. No perſon can be ſuppoſed to labour under the ſcurvy, or any ſymptom of it, unleſs the gums are affected. Putrefaction of the gums is the primary and inſeparable ſymptom of the malady in its very firſt ſtage. *Orthopnœa*, dropſy, and dyſentery, attending the laſt ſtage, render the caſe often incurable. As to ſcorbutic pains, it is remarkable they afflict equally both day and night, and are not increaſed by heat, or by lying in bed. The knees, when ſwelled, are generally covered with large *ecchymoſes*. Theſe never come to ſuppuration on any part of the body, except on the gums, where they often break and ulcerate. The flexor tendons of the *tibia* alone become rigid, *viz.* the tendons of the *ſeminervoſus* and *ſemimembranoſus* muſcles. Colics afflict in this diſeaſe when there is a *diarrhœa* or dyſentery, but never otherwiſe. In many thouſand ſcorbutic patients, I never once ſaw the true pleuriſy, *nephritis*, ſtrangury, nor hæmorrhages from the ſkin, except where there was a wound; although ſcorbutic people are ſubject to hæmorrhages from the lungs, ſtomach, inteſtines,

tines, &c.; nor did I ever obſerve any other ulcers than what have been deſcribed, in the gums and cheeks, much leſs any ſpecies whatever of a *ſcabies*. Scorbutic perſons are never afflicted with epileptic fits, palſies, tremors, &c. Their death is for the moſt part tranquil, if you except their laborious breathing.

I can aver from experience in above a thouſand caſes, that this malady is moſt effectually cured by the freſh juice of ſcurvygraſs and creſſes, either mixed, or ſeparately taken, to the quantity of three ounces twice or thrice a-day in warm broth. Theſe juices occaſion ſlight fluſhings of the face, are carminative, and promote urine and perſpiration. As thoſe herbs cannot be obtained freſh in many parts of *Hungary*, nor in warm climates, the diſeaſe may be effectually cured by three or four ounces of the juice of oranges or citrons, taken twice a-day in a pint of water with ſugar, or rather in whey. By juice of citron in whey, twenty patients were lately cured in the hoſpital of St. *Mark* at *Vienna*. As to a preſervative medicine againſt it, I know of none but the tincture of the *cort. peruv.* taken at bedtime in the quantity of two drams, either by itſelf, or mixed with other bitters. By this remedy the famous Count *Bonneval* preſerved himſelf and his domeſtics, many years in *Hungary*, free from the diſtempers of the country.

1739.

1739. *Frederici Hoffmanni medicinæ rationalis ſyſtematicæ tom. 4. part. 5. cap. 1. de ſcorbuto, ejuſque vera indole.*

In what he terms a compleat hiſtory of this diſeaſe (in an enumeration of the ſymptoms, claſſed in *Willis*'s manner, according to the different parts of the body affected) among other things he obſerves, the ſcorbutic colic is diſtinguiſhed from all others, by the pain being ſo ſhooting, acute, and intolerable. The belly is not, as in other colics, diſtended with a *flatus*: but the naval is drawn inwards, ſo as to form a cavity ſufficient to hold one's fiſt. It is very obſtinate, yielding neither to medicines nor fomentations; and has often this peculiar to it, that it terminates in a palſy. After a preceding ſcorbutic *dyſpnœa*, the patient is very apt to fall into a dropſy, eſpecially if draſtic purgatives have been uſed. The ſcorbutic toothach is diſtinguiſhed from all others, by its ſuddenly attacking, and as ſuddenly leaving the patient. Headachs are moſt troubleſome in the evening; but upon a ſweat breaking out, they leave the patient. Some in this diſeaſe keep awake for many weeks without being ſenſibly weakened by it. Scorbutic ulcers appear in the following manner. Firſt, the part is painful; then the *cuticula* ſeparates in like manner as if boiling water had been poured upon the ſkin; a ſerous humour oozes forth, and the part becomes extremely painful; but true *pus* is ſcarce ever obſerved to flow from the ulcer. At other

times, ſcorbutic ulcers continue deep, and quite dry, without affording either *pus* or *ſanies*; and theſe are very apt to gangrene.

He thinks the beſt cure for the ſcurvy is the mineral waters. They are ſufficient to effect it, as long experience hath convinced him, together with a proper diet and regimen. For this purpoſe, he recommends the *Carolinæ*, *Selteraniæ*, *Erganæ*, *&c.* Where the conveniency of mineral waters is wanting, he adviſes drinking ſimple, pure, and light water of any ſort; which will often remove the diſeaſe. But it is ſtill better if the water partakes of ſteel principles, ſuch as the *Lauchſtadt* ſpring, two miles from *Hall*. It is to be both outwardly and inwardly uſed. He likewiſe recommends a milk-diet, eſpecially aſſes milk. When the ſcorbutic *diatheſis* is complicated with obſtructed *viſcera*, cachexies, the hypochondriac diſeaſe, or the *purpura chronica*; then the cure ſucceeds better, if the milk be taken mixed with the mineral water. He obſerves the great detriment of mercury in this diſtemper; and mentions various antiſcorbutics, bitters, emollients, *&c.* that may be proper.

1744. Siris: *A chain of philoſophical reflexions and inquiries concerning the virtues of tar-water. By the Right Rev. Dr.* George Berkeley, *Lord Biſhop of* Cloyne.

The ſcurvy may be cured (if the author may judge by what he has experienced) by the ſole, regular, conſtant, and copious uſe of tar-water.

1747.

1747. *Theoretiſch practiſche abhandlung des ſcharbockes, wie ſich derſelbige vornemlich bey denen kayſerlich Ruſziſchen armeen an verſchiedenen orten geauſſert und gezeiget hat, &c.* : or, A theoretical and practical treatiſe of the ſcurvy, as it has appeared chiefly in the Imperial *Ruſſian* armies, together with a circumſtantial deſcription of its cauſes, its two claſſes and their different ſpecies, the ordinary and extraordinary ſymptoms, the remedies againſt it, and the neceſſary regimen. By *Abraham Nitzſch.*

Three different opinions of phyſicians concerning this diſeaſe deſerve cenſure. 1*ſt*, Some extend the notion of ſcurvy by much too far, comprehending under it almoſt all diſeaſes in which there is a conſiderable impurity or corruption of the juices. 2*dly*, Some though not entirely denying the exiſtence of the ſcurvy, yet limit or circumſcribe it within too narrow bounds. 3*dly*, Others have deſcribed its cauſes, its different kinds and cure, in too vague and looſe a manner.

It has been difficult for phyſicians to make a perfect ſyſtem of this diſeaſe, as it does not uſually occur in their common practice; being confined chiefly among the poorer ſort of idle people, who are in diſtreſſed circumſtances, and who live in a moiſt air. Beſides the frequent modern practice of drinking tea and coffee, by attenuating the blood and diluting its ſalts, has in place of the ſcurvy in many countries where, according to the relation

tion of credible authors, it in former times greatly prevailed, introduced a new diſeaſe, *viz.* the *purpura*, as Dr. *Hoffman* has ſhewn particularly in his *Diſputatio de Purpuræ genuina Origine, &c.*

It may be proper to premiſe that I am unacquainted with the nature and appearances of the ſcurvy, ſo common and fatal at ſea; but that this diſeaſe was among the firſt which occurred to my obſervation in the army, and it aroſe to ſuch a pitch of violence, as not only to require the utmoſt care and ſkill of the phyſicians and ſurgeons, but alſo to command the attention of the generals.

This evil has been attributed to the uſe of ſalted fleſh-meats, the vapours ariſing from the ſea have alſo been blamed; but ſuch opinions are confuted by daily experience. Others would aſcribe it to a mere want of a ſufficient quantity of vegetables, neglecting more conſiderable circumſtances, as will appear by the following obſervations. There being two claſſes of this diſtemper, that which is denominated the *ſlow* or *cold* ſcurvy, may rather be ſaid to proceed from a concurrence of cauſes and their operation for a conſiderable time, *viz.* a conſtitution impaired by trouble and diſeaſes; improper, groſs, and corrupt aliment; much fatigue, grief, or anxiety of mind; a moiſt air accompanied either with cold or with heat; confinement in low damp crowded places; as alſo drinking impure putrid water. Theſe acting in conjunction pro-

duce

duce the ſcurvy, and are ſufficient to heighten the evil to an extreme degree of violence.

As ſuch cauſes operate but ſlowly in the body, the progreſs of the malady is very gradual. The healthful colour of the face more and more diſappears. There is a general laſſitude. The thighs and legs feel heavy, and a remarkable weakneſs is perceived in the knees and ancles. At the ſame time the gums begin to ſwell and corrupt. The preternatural colour of the face afterwards encreaſes, the legs begin to be painful, the cheeks and joints ſwell, the gums become ſurpriſingly rotten, the body more feeble, and a difficulty of breathing enſues upon uſing of exerciſe, the knees and joints ſeeming to be ſtiff. Finally, the appetite gradually decays, the body becomes conſtipated, the *abdomen* and *hypochondria* are affected. In a certain kind of this diſeaſe, commonly ſeveral blue ſpots appear all at once. By theſe, and the above ſymptoms more and more gaining ground, the true nature of the diſtemper fully and plainly appears. And this is *ſcorbutus lentus ſeu frigidus*, the ſlow or cold ſcurvy, which is by far the moſt frequent malady; the ſymptoms and cauſes of the other, or *hot ſcurvy*, being very different. The former ariſes from a *cacochylia putredinoſo-vappida in primis viis*, with great laxity of the *viſcera* and of the ſecretory and excretory organs, as alſo of all the ſolids: from whence the blood acquires a *lentor*, is rendered corrupt, and in a

manner putreſcent, ſhewing itſelf by a remarkable bad colour, and a preternatural tumour or inflation of the body. It is uſually a tedious troubleſome diſeaſe. The latter is not ſo commonly met with. It proceeds from a prevailing alcaleſcent acrimony and thinneſs of the blood, occaſioning a total waſte of the body, and at all times the moſt violent ſymptoms, with pains and a conſtant fever. In both there is a general wearineſs; a particular debility of the joints; partly ſpungy, fetid, partly hard, ſwelled burning gums; pains in the limbs, fixed or ſhifting; ſtiff and ſometimes alſo ſwelled, nay, much inflamed and violently pained knees; more or leſs hypochondriac ſymptoms, and fever. And theſe are the genuine eſſential ſigns of ſcurvy: but before we proceed to the hot ſcurvy, of which there is but one ſingle ſpecies, it may be proper to diſtinguiſh the different kinds of cold ſcurvies.

The firſt is what occaſions large, black, and blue *vibices*, or ſpots, on the legs and joints; ſometimes on the breaſt and back, not unuſually on one or both eyelids, and on the white of the eye; which appears ſwelled, and of a deep red colour; upon which enſues an *opthalmia*, and afterwards the *chemoſis lenta*. The gums are greatly ſwelled, diſcoloured, and very lax or ſpungy; and when preſſed, diſcharge either a yellow ill-ſcented blood, or matter. The parotid glands are alſo uſually much enlarged and hardened.

This

This ſpecies, proceeding from a remarkable coagulation of the red globules of the blood, I call *ſcorbutus lividus vel liveſcens*, a livid ſcurvy; being the only ſpecies that is accompanied with partly dark or reddiſh large ſpots, or livid ſtreaks upon the ſkin. The patient commonly when they appear is very feveriſh, and the pains are very violent. It occurred moſtly at *Wiburg*, *ann.* 1732; and again at *Peterſburgh*, *ann.* 1733.

In the ſecond ſpecies, the red globules of the blood are not ſo much coagulated into grumes; it proceeds chiefly from a viſcidity and *lentor* of the lymphatic or ſerous parts of the blood. The ſpots appear of a deep red, turning afterwards to a darkiſh yellow; being very ſmall, ſo as to reſemble lentils, fleabites, or *petechiæ*; and are diſcovered no where elſe but on the ſhins and thighs, attended with a ſoreneſs in thoſe parts. Sometimes reddiſh blue *vibices* appear above the knee, and in the ham; the pain and ſwelling there, as alſo the quickneſs of the pulſe, being always increaſed, in proportion to the redneſs of theſe *ſugillationes*. The gums are not ſo lax as in the former ſpecies: the upper part of them, however, is commonly excoriated. On the palate or inſide of the gums ſeveral tumours appear, or on the inſide of the cheeks are obſerved ſwellings, ſometimes hard, knotty, and wart-like; and ſometimes a uniform hard ſwelling extends itſelf even to the back part of the mouth. This ſpecies, from the

form of the ſpots, is denominated a *lenticular* or *petechial ſcurvy*. The patient ſpits more, and the breath is more fœtid, than in any other ſpecies. Sometimes the temporal muſcle is ſwelled and hardened under the zigomatic progreſs; but the parotid glands never are. It ſhewed itſelf, *ann.* 1732, at *Wiburg*, only here and there; but afflicted much greater numbers, *ann.* 1737, in the intrenchments at *Uſt-Samara*.

A third ſpecies of this diſeaſe proceeds from a corruption of the fat or oily particles of the blood. There being no viſcidity of its ſerous concretion or of its red parts, there are conſequently no ſpots. On the contrary, an univerſal pale ſwelling covers the body; which becomes of a yellowiſh colour, when theſe oily particles turn rancid. When the fat aſſumes a hardneſs like tallow, the thighs and arms are prodigiouſly ſwelled and indurated, ſo as not to yield to the impreſſion of the finger; and true *tophi* appear on the hands and ſhins. Now, in this ſpecies the ſerous parts of the blood become much more eaſily and quickly vapid than in the others, and the ſaline particles daily more and more acrimonious. Hence the cheeks are more ſwelled, the knees more violently contracted, the teeth looſer, and the gums much more lax and ſpungy. Sometimes a fungous fleſh riſes at the angle of the lower jaw, and the jaws are locked either with or without an induration of the parotid gland, *crotaphite* or *maſſeter* muſcles.

muſcles. When the inert vapid *ſerum* is accumulated in the *tunica celluloſa*, an *anaſarca* is induced; when within the ſubſtance of the lungs, an aſthma, upon which a true *hydrops pectoris* enſues; when in the lower belly, an *aſcites per infiltrationem*; and when in the glands of the guts, a *diarrhœa*. When this vapid *ſerum*, by addition of the oily and ſaline particles, has acquired an acrimony, it occaſions the moſt violent and gnawing pains in different parts of the body. Wherever it corrupts, the pains become there altogether intolerable, chiefly upon thoſe parts where the ribs are articulated with the *ſternum*; part of the bones of which may be taken out quite carious. It alſo produces a ſpaſmodic ſuffocative aſthma, a colliquative painful *diarrhœa*, and afterwards a gangrene of the cheeks, or an incurable *aſcites*. This ſpecies is of longer duration than any other, continuing often the whole ſummer, until late in autumn. And as it is accompanied with no ſpots, it may be denominated the *pale ſcurvy*; but particularly that ſort of it, when the fat is only thick and viſcous, which then might be called the *mucous pale ſcurvy*; and when it is become rancid, the *ranceſcent ſcurvy*; or when hard, and tallow-like, the *tophaceous ſcurvy*; laſtly, when the ſerum is become acrimonious, the *muriatic ſcurvy*. The mucous ſort was the firſt the author met with, and remarked it moſt frequent before *Aſoph*, and in the general field-hoſpital at St. *Anne*; as alſo in the

Neiſter campaign. He obſerved the tophaceous firſt in *Finland*, at *Borgo*, *ann.* 1742; and the muriatic, where the cartilages of the ribs were really ſeparated from the *ſternum (g)*, as was plainly to be ſeen and felt, at the field-hoſpital at *Abo*, *ann.* 1743.

Theſe are the chief kinds of the ſlow ſcurvy, which occurred in the *Ruſſian* armies, and fell under the author's obſervation. There is indeed yet another ſpecies of it, proceeding probably from a total reſolution of the red part of the blood; which occaſions an extraordinary weakneſs and redneſs of the body, tumified pendulous cheeks, a deep cachexy, extremely ſtinking, fungous gums, full of a bloody humour, with ſomewhat contracted or rather weak knees, *&c.* But this he never obſerved, except in ſome patients in the intrenchments of *Uſt-Samara*.

Thus much of the cold ſcurvy. There remains the other general branch of this diſeaſe, *viz.* the *hot* and *painful ſcurvy*. It is diſtinguiſhed from the former, 1*ſt*, By there being no repletion or ſwelling of the body; on the contrary, there is rather a decay or waſting *(h)*. 2*dly*, The gums are neither ſo fungous, nor do they yield ſo bloody, fœtid, or diſcoloured humour; but are rather very hard, ſwelled, and burning, and ſo painful, that the gentleſt touch gives agony. 3*dly*,

(g) Caſes ſimilar to thoſe at *Paris*. Vid. diſſections, part 2, cap. 7.

(h) Vid. part 2. p. 280.

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The pains are not ſo fixed as in the cold ſcurvy. The patient makes continual complaints, ſighing and bemoaning his conditon; and has a conſtant, though irregular, fever. The pains fly from one member to another; ſometimes from the joints and back to the whole or half of the head, teeth, and neck; where, after occaſioning the moſt exquiſite torture, they again inſtantly attack the outſide or inſide of the *thorax*, occaſioning extreme oppreſſion, ſtitches, *&c.*: afterwards, ſeating themſelves in the *abdomen*, they produce colics, nephritic pains *(i)*, and ſtoppage of urine, and on the extremities all ſorts of convulſive contractions. *4thly*, The knees are extremely rigid and contracted: but, unleſs it has been occaſioned by ſome outward accident, they are not ſwelled or inflamed as in the cold ſcurvy. *5thly*, No ſpots are ſeen. *6thly*, There is a difference to be perceived in the urine, which in the livid and petechial ſcurvies, though not accompanied with any remarkable degree of fever, is commonly of a deep red

(i) Vid. *Sinop.* part 3. p. 400. By the account of northern writers, it would ſeem, that venereal diſeaſes do not ſo readily yield to mercurial medicines there, as they do in warmer climates. *Sinopeus* tells us, that he found great difficulty to cure even a common *gonorrhœa* at *Cronſtadt*. And as for the pox, except it was very recent, the taint could not be ſubdued by repeated ſalivations: for the diſeaſe generally broke out again, always in the ſpring, together with the ſcurvy; the latter ſeeming conſtantly to awake any ſparks of the venereal poiſon lurking in the body. During a ſcorbutic conſtitution, thoſe who, for venereal complaints, underwent a ſlight ſalivation, fell into a dreadful ſcurvy; which being removed, left a worſe *lues* behind it.

colour, and undergoes little alteration by ſtanding: but in the hot ſcurvy, as there is always a fever, it drops a copious ſediment, and ſhews a film ſwimming at the top. This hot ſcurvy he has remarked here and there; yet he no where ſaw more patients labouring under it than at *Wiburgh* and *Cobilack*.

It may not be amiſs to deſcribe the various cauſes which produced this calamity, *viz.* principally the pale ſcurvy, in the order in which they occurred.

1*ſt*, As to the ſiege of *Aſoph*: This place was attacked in the ſpring *ann.* 1736, in very piercing cold weather, accompanied with frequent rain, ſleet, and ſometimes with ſnow. And as there were no woods in the neighbourhood, the troops ſuffered extremely, during this rigorous ſeaſon, for want of firing. Nor did the regiments fare better who were ordered to join us; as moſt of them were obliged to begin a long journey by land, upon a very ſhort warning; or were tranſported in boats down the *Don*, together with the artillery, from the garriſon of *Nova Pawloffſky*, and the adjacent places. Now, as this ſiege, by various accidents, was protracted three months, the inconveniencies and hardſhips which the troops ſuffered, were extremely great. 1*ſt*, The weather became exceſſive hot; and was quite unſupportable during ſun-ſhine, and on calm days. 2*dly*, We had a great deal of moiſt rainy weather; which greatly incommoded our army, which

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was incamped on ſlippery and hilly ground; as alſo the ſick in their tents, who were ill attended; their tents being alſo ill contrived, and badly ſheltered. 3*dly*, Sickneſs was occaſioned by the too frequent eating of fiſh ill dreſſed, with which the plentiful river *Don* abounds. 4*thly*, The bread was ill baked, for want of fewel. 5*thly*, The water was very impure, being taken up from the fordable parts of the *Don*, which became every day worſe and worſe. To which may be added, the preceding camp-diſorders, *viz. diarrhœas*, and obſtinate quartans; beſides the paſſions of the mind raging in the breaſts of the ſoldiers, *viz.* revenge, anger, diſcontent, *&c.* and the great fatigues they underwent.

As to what regards the fortreſs of St. *Anne*; though this place is ſituated pretty high, yet the country about it lies ſo low with reſpect to *Great* and *Small Ruſſia*, that it is from thence annually overflowed, generally in the months of *March* and *April*, for thirty verſts around, upon the breaking looſe of the ice and ſnow. It appears at this time like a great ſea; and many parts are ſunk ſeveral fathom below water. This inundation of the *Don* brings along with it an incredible number of excellent and very fat fiſh; which were ſold exceſſively cheap, and eat in immoderate quantities. During the inundation, the air is very raw, cold, and windy. At the time of its drying up, the days are exceſſively hot; and the ſun is ſcorching, when the weather

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is fair; but the nights, on the contrary, are intolerably cold, with a foggy moiſt air. As the moraſſes dry up, and the remaining fiſh (eſpecially cray-fiſh, of which there is an aſtoniſhing quantity left behind) begin to putrify, the air becomes more ſtinking; and ſo thick, that it is ſeveral hours every morning, before the ſun has power to diſſipate the noxious vapour. Upon the retreating of the flood, the ground ſhews a ſandy bottom, and is formed into little iſlands and banks of ſand, ſurrounded with fords filled with ſtagnating water. What was drank, was often not taken where the ſtream was quick and deep, but in ſuch fords where it was muddy and greaſy. The fiſh remaining behind, were eat in immoderate quantities ill dreſſed. The barracks were built on moraſs, damp ground, and too low. Laſtly, The ſoldiers being the only inhabitants of the garriſon, were obliged to ſtand every day up to their middle in water, in order to unload the neceſſary wood; which is always ſent them for fewel and building from the *Ukraine*.

The principal reaſon why, of thoſe regiments who marched to *Oczakow*, ſuch a conſiderable number were attacked by the ſcurvy, and brought into the hoſpital at *Cobilack*, was, the exceſſive fatigues they underwent through the whole winter, partly in cutting open the ice of the *Neiper*, to prevent the incurſions of the *Tartars*; and partly in performing other hard and ſevere military duties, either

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in ſtormy ſleety weather, or during exceſſive froſt and cold, without having proper conveniencies, lodgings, or diet. Even thoſe who underwent no fatigue, being afflicted with ailments of different ſorts, for want of ſufficient attendance, reſt, and quiet, in the army, became alſo ſcorbutic.

As to what regards the great number of ſcorbutic patients, which occurred not only during the march of the army from *Oczakow*, but alſo during the *Neiſter* campaign; the author treats only of the latter, as having been there in perſon; and becauſe, according to his beſt information, the occaſions and cauſes of the malady in both differed very little, or rather not at all.

The moſt part of the recruits required to complete the army, joined them ſeldom ſooner than when either the army was ready to march, or was actually in motion. And though they were generally young raw fellows, exceſſively fatigued after a long and tedious journey; yet it was not poſſible to grant them any reſt or neceſſary refreſhment. They were directly incorporated into the reſpective regiments; and entered at once upon a new way of life, *viz.* of conſtant diſquiet, military hardſhips and ſeverities, and of great fatigue. The marches were begun early in the morning, often during thick fogs and dews, heavy rains, or ſevere cold. Towards the middle of the day, they were oppreſſed either with intolerable ſcorching heat, and

clouds of duſt, or with much rain. The march was protracted for the moſt part till noon, and often beyond that time, according as water, wood, and forage were to be met with in thoſe deſert places. Thus the poor ſoldier, after a fatiguing journey, either quite ſpent with thirſt, and enfeebled by the exceſſive heat of the ſun, or drenched in rain, arrived at laſt at the camp. But often, even here, no reſt could be permitted him. He was obliged, according as it was his tour, to go upon the piquet, *tabunen*, or the centinel's duty. Another great hardſhip was the want of good and clean water upon the roads. Overcome by the exceſſive heat, ſome threw themſelves naked into every dirty muddy pond they met; while others endeavoured to quench their violent drought, occaſioned by the duſt and ſun, by greedily drinking up every drop of filthy ſtagnating water they ſaw upon the ground. This bred many diſeaſes, eſpecially continual inflammatory fevers, *&c.* Plethoric habits were attacked with apoplectic fits; which if not removed by immediate blood-letting, they quickly expired. Their blood was ſo inflamed, that it came out as thick as pitch. But the hardſhips which the ſick underwent, were ſtill greater. They were by moſt regiments carried in open carts, expoſed to all the inclemencies of the climate and weather, *viz.* to rain, duſt, and wind, heat and cold. In paſſing the defiles, being generally the laſt, it was always ſeveral hours before

before they arrived in camp after their regiments; notwithſtanding on the marching-days they ſet out early in the moning, long before the reſt of the army; and after having been quite ſoaked in rain in their carts, were then taken out, and laid upon their bed ſtretched out under moiſt canvas, upon the cold wet ground. Nor, in ſuch afflicting circumſtances for the ſick, was it a ſmall addition to their miſery, that, in this deſolate and uninhabited country, proper food and drink could not be procured, in order to reſtore them to health and ſtrength. Hence it is not to be wondered at, that from ſuch cauſes, as alſo by reaſon of the great preceding ſickneſs and fevers in the camp (which, for want of conveniencies and proper treatment, were brought to no perfect criſis) the ſcurvy raged with ſuch uncommon deſtruction.

It is, however, remarkable, that this evil was greatly prevented in the *Chocim* campaign, *ann.* 1739, by ſending the recruits much earlier; ſo that they had ſufficient time to be refreſhed after their journey, and were accuſtomed a little to the military life and diet before they marched: as alſo by every regiment's being provided with a certain number of covered waggons for their ſick; by which they were at all times ſheltered from rain, duſt, wind, and weather. The happy effect of thoſe excellent regulations was, that in a whole diviſion, conſiſting of ten or twelve regiments, we had ſcarcely as many ſcorbutic

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caſes as occurred in the former campaign in one regiment only; and then again an incredible leſs number died.

From theſe obſervations it appears that the ſcurvy occurs as well in the hotteſt climates, and in the midſt of the continent, as in the cold northern regions, or near the ſea. The pale ſcurvy is the only ſpecies of the *ſcorbutus lentus* which is not confined to certain months of the year. In the livid ſcurvy, the blood is very liable to an expanſion, which has occaſioned this ſpecies ſometimes to have been miſtaken for the hot ſcurvy: heating and irritating remedies for this reaſon muſt be avoided. The acrid antiſcorbutics are ſerviceable in the petechial and *pallido-mucous* ſcurvies; as alſo in the tophaceous, where it is proper to give ſalts along with them, ſuch as *ſal. abſinth. cremor tartar.* and *tartar. vitriol.*; but in the ranceſcent and muriatic ſcurvies, they are very pernicious. It is to be obſerved, that the ranceſcent and muriatic ſcurvies do not affect the whole body. They are rather ſymptoms incident to other ſpecies; as for example, to the livid ſcurvy, though but ſeldom and in few parts of the body; to the pale ſcurvy, more frequently and then in many parts of the body. The ranceſcent appears principally in the cheeks; the muriatic commonly firſt at the ribs, and their articulation with the ſternum.

As to the proper regimen, the ſick in the ſlow ſcurvy ought to have particularly ſpa-

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cious dry rooms, in which too many of them are not to be crowded. The apartments are to be kept clean and airy, and often perfumed with the ſteam of ſtrong vinegar poured on hot ſtones, or of burnt juniper-berries. Thoſe who are very feeble, and ſuch as are affected with the hot or with the muriatic ſcurvy, cannot bear exerciſe, nor others in the morning and evening; or an expoſition to a cold moiſt air. Patients in the pale ſcurvy eſpecially, require hot and dry rooms; whereas thoſe in the hot ſcurvy bear with a moiſt air better than with an air too hot and dry; and are particularly much refreſhed in hot dry weather by having freſh ſand, or graſs thrown in their room, or water ſprinkled on the floor.

Bathing is prejudicial in the beginning of the ſlow ſcurvy. Freſh vegetables, though otherwiſe proper, are not to be permitted when the body is already much waſted, or in a *diarrhœa*. Horſe-raddiſh and fir-tops ſteeped and fermented with beer; or infuſed in brandy: and muſtard, where no fever or other ſymptoms forbid their uſe, are extremely ſerviceable, principally in the petechial and pale mucous ſcurvies, after cleanſing the firſt paſſages and abdominal *viſcera*.

1748. *A voyage round the world, in the years* 1740, 41, 42, 43, 44, *by* George Anſon, *Eſq; now Lord* Anſon, *commander in chief of a ſquadron of his Majeſty's ſhips, ſent upon*

upon an expedition to the South ſeas. Compiled from his papers and materials, by Richard Walter, *M. A. &c.*

Soon after our paſſing ſtraits *Le Maire*, the ſcurvy began to make its appearance amongſt us: and our long continuance at ſea, the fatigue we underwent, and the various diſappointments we met with, had occaſioned its ſpreading to ſuch a degree, that, at the latter end of *April*, there were but few on board who were not in ſome degree afflicted with it; and in that month no leſs than forty-three died of it on board the *Centurion*. But tho' we thought, that the diſtemper had then riſen to an extraordinary height; and were willing to hope, that as we advanced to the northward, its malignity would abate: yet we found, on the contrary, that, in the month of *May*, we loſt near double that number. And as we did not get to land till the middle of *June*, the mortality went on increaſing; ſo that, after the loſs of above 200 men, we could not at laſt muſter more than ſix foremaſt men in a watch, capable of duty.

This diſeaſe, ſo frequently attending all long voyages, and ſo particularly deſtructive to us, is ſurely the moſt ſingular and unaccountable of any that affects the human body. Its ſymptoms are unconſtant and innumerable, and its progreſs and effects extremely irregular: for ſcarcely any two perſons have the ſame complaints; and where there hath been found ſome conformity in the ſymptoms,

toms, the order of their appearance has been totally different. However, though it frequently puts on the form of many other diſeaſes, and is therefore not to be deſcribed by any excluſive and infallible criterions; yet there are ſome ſymptoms which are more general than the reſt, and occurring the oftener, deſerve a more particular enumeration. Theſe common appearances are, large diſcoloured ſpots diſperſed over the whole ſurface of the body; ſwelled legs; putrid gums; and, above all, an extraordinary laſſitude of the whole body, eſpecially after any exerciſe, however inconſiderable: and this laſſitude at laſt degenerates into a proneneſs to ſwoon, on the leaſt exertion of ſtrength, or even on the leaſt motion. This diſeaſe is likewiſe uſually attended with a ſtrange dejection of ſpirits; and with ſhiverings, tremblings, and a diſpoſition to be ſeized with the moſt dreadful terrors on the ſlighteſt accident. Indeed it was moſt remarkable, in all our reiterated experience of this malady, that whatever diſcouraged our people, or at any time damped their hopes, never failed to add new vigour to the diſtemper: for it uſually killed thoſe who were in the laſt ſtages of it, and confined thoſe to their hammocks who were before capable of ſome kind of duty. So that it ſeemed, as if alacrity of mind, and ſanguine thoughts, were no contemptible preſervatives from its fatal malignity.

But it is not eaſy to complete the long roll of the various concomitants of this diſeaſe. For it often produced putrid fevers, pleuriſies, the jaundice, and violent rheumatic pains. And ſometimes it occaſioned an obſtinate coſtiveneſs; which was generally attended with a difficulty of breathing; and this was eſteemed the moſt deadly of all the ſcorbutic ſymptoms. At other times the whole body, but more eſpecially the legs, were ſubject to ulcers of the worſt kind, attended with rotten bones, and ſuch a luxuriancy of fungous fleſh as yielded to no remedy. But a moſt extraordinary circumſtance, and what would be ſcarcely credible upon any ſingle evidence, is, that the ſcars of wounds which had been for many years healed, were forced open again by this virulent diſtemper. Of this there was a remarkable inſtance in one of the invalids on board the *Centurion*, who had been wounded above fifty years before at the battle of the *Boyne*: for though he was cured ſoon after, and had continued well for a great number of years paſt; yet, on his being attacked by the ſcurvy, his wounds, in the progreſs of his diſeaſe, broke out afreſh, and appeared as if they had never been healed. Nay, what is ſtill more aſtoniſhing, the callous of a broken bone, which had been compleatly formed for a long time, was found to be hereby diſſolved; and the fracture ſeemed as if it had never been conſolidated. Indeed, the effects of this diſeaſe were in almoſt every inſtance

wonderful. For many of our people, though confined to their hammocks, appeared to have no inconſiderable ſhare of health; for they eat and drank heartily, were chearful, and talked with much ſeeming vigour, and with a loud ſtrong tone of voice; and yet on their being the leaſt moved, though it was only from one part of the ſhip to the other, and that in their hammocks, they have immediately expired. And others, who have confided in their ſeeming ſtrength, and have reſolved to get out of their hammocks, have died before they could well reach the deck. And it was no uncommon thing for thoſe who could do ſome kind of duty, and walk the deck, to drop down dead in an inſtant, on any endeavours to act with their utmoſt vigour; many of our people having periſhed in this manner, during the courſe of this voyage.

Upon arriving at the iſland of *Juan Fernandes*, 167 ſick perſons were put on ſhore, beſides at leaſt a dozen who died in the boats, on their being expoſed to the freſh air. The extreme weakneſs of the ſick may be collected from the numbers who died after they got on ſhore: for it had generally been found, that the land, and the refreſhments it produces, very ſoon recover moſt ſtages of the ſea-ſcurvy; yet it was near twenty days after their landing, before the mortality was tolerably ceaſed: and for the firſt ten or twelve days, they buried rarely leſs than ſix each

day; and many of thoſe who ſurvived, recovered by very ſlow and inſenſible degrees. Indeed thoſe who were well enough, at their firſt getting on ſhore, to creep out of their tents, and crawl about, were ſoon relieved, and recovered their health and ſtrength in a very ſhort time; but in the reſt, the diſeaſe ſeemed to have acquired a degree of inveteracy altogether without example.

It was very remarkable what happened to the *Glouceſter*, which, like the other ſhips in that ſquadron, had ſuffered the moſt unparallelled hardſhips, and buried three fourths of her crew in this diſeaſe; that, upon landing the remainder of her ſick, leſs than eighty in number, very few of them died. Whether it was (as the ingenious author obſerves) that the fartheſt advanced in the diſtemper were already dead, or the greens and freſh proviſions ſent on board them when plying off that iſland, had prepared thoſe who remained for a ſpeedy recovery; their ſick, however, in general, got much ſooner well than the *Centurion*'s crew.

The havock which this dreadful calamity made in thoſe ſhips, was truly ſurpriſing. The *Centurion*, from her leaving *England*, when at this iſland, had buried 292 men, and had but 214 remaining of her complement. The *Glouceſter*, out of a ſmaller complement, buried the ſame number, and had only 82 alive. This dreadful mortality had fallen ſeverer on the invalids and marines than

than on the ſailors: for on board the *Centurion*, out of fifty invalids, and ſeventy-nine marines, there remained only four invalids, including officers, and eleven marines; and on board the *Glouceſter*, every invalid died, and only two marines eſcaped out of forty-eight.

In leſs, however, than ſeven weeks after leaving the coaſt of *Mexico*, having continued in perfect health for a conſiderable time before, this fatal diſeaſe broke out again amongſt them. Upon which occaſion, the ingenious author makes the following remarks.

Some amongſt us were willing to believe, that in this warm climate the violence of the diſeaſe, and its fatality, might be in ſome degree mitigated. But the ravage of the diſtemper at that time convinced them of the falſity of this ſpeculation; as it likewiſe exploded other opinions about the cauſe and nature of this diſeaſe. For it has been generally preſumed, that plenty of water, and of freſh proviſions, are effectual preventives of this malady. But it happened in the preſent caſe, we had a conſiderable ſtock of freſh proviſions on board, being the hogs and fowls taken at *Paita*. We beſides, almoſt daily, caught great abundance of bonito's, dolphins and albicores: and the unſettled ſeaſon having proved extremely rainy, ſupplied us with plenty of water; ſo that each man had five pints a-day during the paſſage. But notwithſtanding this plenty of water, and freſh proviſions diſtributed among the ſick,

the whole crew often fed upon fiſh; yet neither were the ſick hereby relieved, nor the progreſs and advancement of the diſeaſe retarded. It has likewiſe been believed by many, that keeping the ſhip clean and airy betwixt decks, might prevent, or at leaſt mitigate the ſcurvy: yet we obſerved, during the latter part of our run, that, though we kept all our ports open, and took uncommon pains in ſweetening and cleanſing the ſhip; yet neither the progreſs, nor the virulence of the diſeaſe were thereby ſenſibly abated. The ſurgeon at this time having declared, that all his meaſures were totally ineffectual for the relief of his patients, it was reſolved to try the effects of *Ward*'s drop and pill; and one, or both of them, at different times, were given to perſons in every ſtage of the diſtemper. Out of the numbers who took them, one, ſoon after ſwallowing the pill, was ſeized with a violent bleeding at the noſe. He was before given over by the ſurgeon, and lay almoſt at the point of death; but he immediately found himſelf much better, and continued to recover, though ſlowly, till we arrived on ſhore near a fortnight after. A few others were relieved for ſome days. But the diſeaſe returned again with as much virulence as ever; though neither did theſe, nor the reſt who received no benefit, appear to be reduced to a worſe condition than they would have been if they had taken nothing. The moſt remarkable property of theſe medicines

in almoſt every one that took them, was, that they operated in proportion to the vigour of the patient. So that thoſe who were within two or three days of dying, were ſcarcely affected; and as the patient was differently advanced in the diſeaſe, the operation was either a gentle perſpiration, an eaſy vomit, or a moderate purge. But if they were taken by one in full ſtrength, they then produced all the before-mentioned effects with conſiderable violence; which ſometimes continued for ſix or eight hours together with little intermiſſion. Upon their arrival at *Tinian*, they ſoon began to feel the ſalutary influence of the land: for though they had buried in two days before twenty-one men, yet they did not loſe above ten more from the day after they were landed; and reaped ſo much benefit from the fruits of the iſland, particularly thoſe of the acid kind, that in a week's time there were but few of them who were not ſo far recovered as to be able to move about without help.

1748. *A voyage to* Hudſon's-Bay, *by the* Dobbs *galley, and* California, *in the years* 1746 *and* 1747, *for diſcovering a north-weſt paſſage. By* Henry Ellis.

The bringing two caſks of brandy from *York-fort* for our *Chriſtmas* cheer, was attended with fatal conſequences. The people had been healthy enough before this ſeaſon of mirth came; but indulging themſelves too

freely, they were ſoon invaded by the ſcurvy, the conſtant attendant on the uſe of ſpirituous liquors. It is a melancholy, but withal a neceſſary taſk, to deſcribe the progreſs of this foul and fatal diſtemper. Our men, when firſt ſeized with it, began to droop, to grow heavy, liſtleſs, and at length indolent, to the laſt degree: a tightneſs in the cheſt, pains in the breaſt, and a great difficulty in breathing followed; then enſued livid ſpots upon the thighs, ſwelled legs, contraction of the limbs, putrid gums, teeth looſe, a coagulation of blood upon and near the back-bone, with countenances bloated and ſallow; theſe ſymptoms continually increaſing, till at length death carried them off, either by a flux or a dropſy. Thoſe medicines, which in other countries are generally uſed with good effects, proved entirely ineffectual here. For unctions and fomentations, when applied to contracted limbs, afforded no relief: freſh proviſions, indeed, when we could get them, did ſomewhat. But the only powerful and prevailing medicine was tar-water; and the ſteady uſe of this ſaved many, even after the diſeaſe was far advanced, when all other medicines loſt their efficacy, and were tried to no purpoſe. As far as we could obſerve, this ſalutary drink operated no other way than by urine *(k)*.

(k) Upon this relation, I muſt beg leave to obſerve, that though the immoderate uſe of ſpirits had certainly pernicious effects; yet the ſeverity of the winter, their being denied proper refreſhments from the *Engliſh* forts, and particularly,

1749. *An hiſtorical account of a new method of extracting the foul air out of ſhips*, &c. *with the deſcription and draught of the machines by which it is performed*; *by* Samuel Sutton, *the inventor. To which are annexed, Two relations given thereof to the Royal Society, by Dr.* Mead, *and Mr.* Watſon; *and, A diſcourſe on the ſcurvy, by Dr.* Mead. Ejuſdem monit. et præcept. medic. cap. 16. de ſcorbuto.

The learned author very juſtly deſcribes the moſt eſſential ſymptoms of the ſcurvy. He imagines the air even more than any other agent concerned in bringing on this calamity. How the ſea-air acquires ſuch noxious qualities, he accounts for in the following manner. In the firſt place, moiſture weakens its ſpring; next a combination of foul particles, ſuch as are contained in the breath of many perſons crouded together, and ſome perhaps

larly, in ſuch circumſtances, a want of greens and herbage, which do not ſeem to have appeared on the ground till towards the latter end of *March*, p. 204, were what principally occaſioned the diſeaſe. As he very juſtly accounts for its return upon their paſſage home, p. 281. where he ſays, "The "uncomfortable weather we had, made ſo chiefly by the "thick and noiſome fogs, proved the cauſe that many of our "people began now to relapſe into their old diſtemper, the "ſcurvy." As to the good effects aſcribed to the tar-water while at *Port-Nelſon*, it were to be wiſhed, both in this and many other relations of the effects of medicines in this diſeaſe, that we had always been informed what other regimen the patients underwent, particularly as to their diet and lodgings. The mortality from this diſeaſe ſeems to have been increaſed in the latter end of *January*; and in the latter end of *March* ſeveral were in a bad way. Some likewiſe died of it on their paſſage home; which could not be for want of this medicine on board a ſhip, which has been often tried at ſea.

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diſeaſed; then the filthineſs of water ſtagnating in the bottom of the ſhip; laſtly, ſalts imbibed from the ſea, ſome of which may probably have proceeded from putrified animals in that element, may inſinuate themſelves into the blood, and, in the nature of a ferment, corrupt the whole maſs. Other cauſes, as bad diet, *&c.* concur to breed the diſeaſe. For the prevention of it, he recommends the uſe of Mr. *Lowndes*'s ſalt made from brine, as preferable for ſalting proviſions, both fleſh and fiſh, to that made from ſea-water, even to the bay-ſalt; would have ſtock-fiſh uſed at ſea, which is dried without any ſalt, inſtead of ſalt fiſh; and thinks, that the *Dutch gort*, which (as he had been informed) is a kind of barley ground, is not ſo hot and drying as oat-meal. Wine-vinegar is likewiſe a proper preſervative. He obſerves, that the diſeaſe is cured by vegetables, and land-air; and that hotter and colder vegetables, when mixed, qualify each other, eſpecially as the acid fruits in Lord *Anſon*'s voyage were found of moſt benefit. Milk of all ſorts, and its whey, when it can be had, are proper antiſcorbutic food and phyſic. But as the deſign of this diſcourſe is principally to demonſtrate the uſefulneſs of *Sutton*'s machine, he particularly inſiſts upon the advantage that might reaſonably be expected from it. The book indeed contains ſeveral indiſputable teſtimonies of the uſefulneſs of theſe pipes; the operation

ration of which is accounted for by the Doctor and Mr. *Watſon.*

1750. *De tabe glandulari, ſive de uſu aquæ marinæ in morbis glandularum, diſſertatio. Auctore Ricardo Ruſſel, M. D.*

The uſe of ſea-water would be very beneficial to ſailors in bilious colics, both to prevent the diſeaſe, and its return after the cure. This latter is to be effected by a *ſemicupium*, and purging ſalts, after the inflammation has been removed by plentiful bleeding. In his letter to Dr. *Lee*, he obſerves, that, after taking into ſerious conſideration the caſe of that ſcorbutic putrefaction which afflicts ſeamen, he finds, that it is falſely aſcribed to their ſalt proviſions. Salt not only preſerves meat from corruption, but mariners alſo from that corrupt ſtate. This is confirmed, by remarking the ſtrength and good ſtate of health which poor country-people enjoy whilſt living upon the ſame food as ſeamen. Thus there are many in every country who have lived, perhaps for thirty years, altogether upon ſalt beef, bacon, and coarſe puddings, unleſs upon a high holiday, when they are ſometimes regaled with a bit of freſh meat; and yet continue perfectly healthy and ſtrong. So that the difference between thoſe people and ſeamen lies only in this, that the latter have not the benefit of ſo much exerciſe, and live in a moiſt air, by which the tone of their fibres is relaxed, and perſpiration ſtopt.

1750.

1750. *An eſſay on fevers*, &c. *By Dr.* John Huxham. *Appendix, A method for preſerving the health of ſeamen in long cruiſes and voyages.*

He thinks the ſcurvy at ſea owing to bad proviſions, bad water, bad beer, *&c.* The pernicious effects of which will be conſiderably augmented by living in a moiſt, ſalt atmoſphere, and breathing the foul air betwixt decks. The moſt effectual way of correcting this alcaleſcent acrimony in the blood, is by vegetable and mineral acids: and for that purpoſe he particularly recommends cyder; of which each ſailor ſhould have at leaſt a pint a-day.

1736. 1750. *Or a journal of voyages made by order of the court of* Ruſſia *into* Kamavatzin, *by the coaſt of* Siberia, *&c. By M.* Gmelin.

On the 18th of *Auguſt* 1736, the ſhip entered the river *Karaulach*, in the latitude of 71 deg. The firſt care of the commanding officer was to build a habitation for their winter quarters. It was made of wood, 76 feet long, 25½ broad, and 17 high. They divided it into four apartments, and the chinks being well corked up, it was to be kept warm with three ſtoves. On the 12th of *September* they took poſſeſſion of their winter quarters, all of them being then in perfect health except one ſoldier. Towards the end of *October* the cold became very ſevere, and the

ſcurvy

ſcurvy made its appearance. The ſun was ſeen no more after the 5th of *November* for two months. On the 18th of *December* the lieutenant, a man of a ſtrong and robuſt conſtitution, and another perſon, died of the ſcurvy. The ſun making its appearance for the firſt time on the 19th of *January*, gave great expectation that the ſick would by degrees be reſtored to health; but yet there died ſeven in this month, and in the two following months, twenty-four perſons.

The malady began by pains afflicting thoſe parts of the body which were formerly affected with ulcers, or other ailments. The appetite was a little diminiſhed; after which followed a weakneſs of the body, accompanied with an extraordinary lethargic indolence. The legs became ſwelled, and were covered with blueiſh ſpots. The patients ſneezed with difficulty, and then piercing pains were felt in the back. The teeth were all looſe; the breath was fœtid. Towards the cloſe of the diſeaſe a dropſy came on, accompanied with unquenchable thirſt. A dry cough and coſtiveneſs were ſymptoms common to all, inſomuch that many remained conſtipated for two or three weeks: the ſtrongeſt purgatives were of no effect; and in this condition one died after another. Towards the cloſe of life they had all a great propenſity to go to ſtool, upon which many expired. Some, however, who were once open in their body, did not afterwards loſe

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that benefit of nature; but then at each time they diſcharged blood, and continued ſo to do until death in a few daws put an end to their miſery.

With regard to the caſe of the lieutenant it is ſaid, that towards the end of the diſeaſe, it was remarked, he had a violent fever, an aſthma, an inſenſibility over the whole body, and an hiccough, under which he expired. Upon opening the body, the right ſide was obſerved all over marked with blewiſh ſcorbutic ſpots. The *penis* was erect, and diſcharged blood into the bladder; in the cavity of which was found a quantity of coagulated blood and other impurities. The right lobe of the lungs was covered with a viſcid humour; the throat and *aſpera arteria* were inflamed; the heart and the great artery were diſtended with a blackiſh blood; and the kidneys as if they had been mortified: the ſtomach nevertheleſs was diſcovered ſound, and without defect.

The moſt memorable circumſtances which deſerve attention, and could not be remedied during the courſe of this malady, were, *1ſt*, Their winter quarters being too near the ſea. *2dly*, The cold was ſo exceſſive in their habitation, that whatever quantity of fewel was heaped upon the fire, the furnaces were hardly warm; nor could the men be brought to a moderate degree of heat in any other way than by ſtanding cloſe to the vent-hole of the ſtove which opened into their chamber.

3*dly*,

3*dly*, the planks of their houſes were always moiſt, and the walls of it as it were frozen over. 4*thly*, None daring to ſtir abroad on account of very high winds, and great falls of ſnow, they were often obliged to keep the dead bodies four or ſix days unburied in their houſe.

Of all the company, eight perſons only had the good fortune to eſcape with life; whoſe preſervation it is not eaſy to account for. 'Tis true, that the ſcurvy having ſpared them, they were kept in perpetual motion and exerciſe; being conſtantly employed in cutting down wood, in warming the chambers, in ſerving and aſſiſting the diſtreſſed: and to this inceſſant labour they attributed in part their preſervation. Nevertheleſs the *Ruſſian* prieſt, who was not employed in ſo laborious occupations, imputed his ſafety to the contrivance of a vent he had made in his appartment, which gave free iſſue outwardly to the noxious exhalations ariſing from the humidity of the wood and clay of which the ſtoves were built; theſe he imagining to be the chief cauſe of the malady.

1750. *A diſſertation on quick-lime and lime-water. By Dr.* Ch. Alſton.

The Doctor informs us, that he publiſhed this paper chiefly for the uſe of mariners. He attributes the good effects of lime-water in putrid ſcurvies, and ſome other diſeaſes, not ſo much to an antiſeptic virtue (which it is poſſeſſed

poſſeſſed of) as to its penetrating, detergent, and diuretic qualities. He has diſcovered, that lime prevents the corruption of water, or inſects breeding in it; and thinks this water will be uſeful in curing the diſeaſes to which ſea-faring people are moſt ſubject. One pound of freſh well-burnt quick-lime of any kind *(l)*, is enough to be put in a hogſhead of water; and this may be uſed, not only for common drink by the diſeaſed, or for prevention by the healthy; but alſo by boiling, and expoſing it to the air for a ſhort time, it will become, after long keeping, ſweet and wholſome water. When lime-water, by ſtanding expoſed for ſome time to the air, has thrown up all its cruſts, none of the qualities of lime-water remain in it. From the notable quality he found in quick-lime to prevent water from corrupting, he often thought, that ſome of it put in the ſhip's well would effectually prevent the corruption of the water there, and conſequently the putrid ſtreams of foul air ariſing from thence. All theſe experiments are ſafe, eaſy, and attended with no expence.

1753. *An eſſay on the ſea-ſcurvy: wherein is propoſed an eaſy method of curing that diſtemper at ſea, and of preſerving water ſweet for any cruiſe at ſea. By Dr.* Anthony Addington.

(l) Stone-lime (not ſhell or chalk-limes) preſerve water from putrefaction.

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The deſcription of the diſeaſe is borrowed from *Cockburn*, *Boerhaave*, *Hoffman*, *Eugalenus*, Lord *Anſon*'s voyage, *&c.* The cure propoſed at ſea, is to be begun, if there be any mark of fulneſs, by blood-letting. This is recommended upon the authority of *Hoffman*, *Boerhaave*, *Sennertus*, and *Brucæus*, as alſo *Eugalenus*. In order to leſſen the quantity of redundant blood ſtill more, the patient is afterwards to be put under a courſe of gentle and daily purgation, with ſea-water. *Boerhaave*, without any reſtriction to the habit of the patient, gives us the greateſt expectations from a moderate and protracted courſe of purging in the ſcurvy; and *Hoffman* ſpeaks to the ſame purpoſe. But where there are marks of virulence in the ſcurvy, it will be loſt labour to rely on ſimple ſea-water, unaſſiſted with any other antiputrid medicine. So if, in conjunction with that water, we make a prudent uſe of the ſpirit of ſea-ſalt, we ſhall but ſeldom be diſappointed in our hopes of a cure. This is that ſafe and effectual corrector, which will counteract the putrifying quality of rock and bay ſalt, when they have been taken in ſuch large quantities as to occaſion the ſcurvy. Twenty drops of this ſpirit taken every day, will probably ſucceed with moſt patients. Five of them are to be given in the ſea-water every morning, and the remainder at any other times in freſh water: to a pint of which, ten drops will im-

part an agreeable acidity. When the veſſels have been pretty well unloaded by the purgation with ſalt-water, and the bad ſymptoms begin to decline, the patient (with ſome exceptions) is to be bathed every morning in the ſea juſt before he drinks his water. Sea-water is alſo to be uſed externally, where there are ulcers on the gums and legs, or rotten bones. To give the greateſt ſanction that can be given to the outward application of ſea-water in ſcorbutic ulcers, it is adviſed for them by *Hippocrates*. In ſcorbutic fluxes, mortifications, and hæmorrhages, the ſalt water is to be omitted. The moſt probable way to remove the laſt ſymptom, is, to bleed the patient as often and as much as his ſtrength and age will permit; to open the belly, if coſtive, by glyſters; and to oblige him to live entirely on the unfermented farines, and to drink freely of water ſoftened with *gum. arabic.* and ſtrongly acidulated with *ſp. ſalis.* About an ounce and a half of ſpirit of ſalt to a tun of water, will preſerve it from corrupting.

1755. *A treatiſe on the ſcurvy. Deſigned chiefly for the uſe of the* Britiſh *navy. By* Charles Biſſet.

Introduction. The companies of ſhips of war in their paſſage to *Jamaica* being advanced near the tropic, the ſolid fibres chiefly at the ſurface of the body ſuffer an extraordinary

nary expanſion, and conſequently relaxation; and the fluids are rarified: an effect being produced ſimilar to that of the dry bath by the ſudden increment of the ſolar heat. As they advance more ſoutherly, a propenſity to ſweating encreaſes; the veins however at length begin to ſubſide, the circulation flackens, the complexion fades, the appetite is a little impaired, the ſtrength and ſweating diminiſh, and the firſt ſymptoms of ſcurvy appear. As they advance further in their paſſage the ſymptoms are aggravated, the ſweat becomes viſcid and ſcanty, and can be forced now only by hard labour, or the heat of the *orlope* air; and when theſe cauſes ceaſe, is quickly dried up. About this time ſome continued or remitting fevers often appear. Theſe are fatal only as commonly terminating in the moſt ſwift and fatal ſpecies of the ſcurvy. If a ſhip makes a quick ſummer paſſage to *Jamaica*, the crew will not be liable to the diſeaſe; yet if ordered out upon a long cruize before *November* following, the ſcurvy will probably appear, eſpecially if they are invaded by the bilious fever. After *October* it will ſeldom appear epidemical, eſpecially if they arrived ſoon after the vernal æquinox; for the ſcurvy ſeldom appears in the *Weſt-Indies* in the winter. Negroes, Creols, and ſeaſoned Europeans are not obnoxious to the bilious fever, and ſeldom to the ſcurvy. Europeans who arrive there under

a ſcorbutic cachexy, have no prickling heat or ruſh, until it is removed, when the ſkin becoming moiſt and relaxed, the humours are determined abundantly thereto; the prickly heat appearing and encreaſing with the health of the individual. Change of air by means of ventilators, is not neceſſary for the health of ſeamen in the torrid zone. The air of the *orlope* is not ſo foul and confined as is commonly imagined; for in the circumference of the after hatchway the air is conſiderably rarified, partly by the heat of the people, but chiefly by the flame of a great number of candles, which occaſion a conſtant ſtream of air aſcending by the fore-hatchway's. The effluvia of the bilge-water conſiſt in a great meaſure of the acid ſpirit of ſea-ſalt. Theſe effluvia moſt probably contribute to correct the *orlope* air, as this ſpirit forms with the perſpired animal matter a neutral ſalutary ſpirit in the air, and the aerial fermentation thence reſulting, may be one cauſe of the great heat in this ſubaqueous apartment. Diſagreeable ſmells however of this ſort, never do any ſenſible prejudice to thoſe who are accuſtomed to them, unleſs they be intolerable by the denſity of the fetid vapour, as happens ſometimes in the ſhip's well. The moſt unwholſome inhabited place is the forepart of the lower gun-deck, as being leaſt aired and moſt damp.

Chap. 1. *Of the progreſs and different ſpecies of the ſcurvy.*

After a deſcription of the two firſt ſtages of this malady differing in nothing material from common accounts, he obſerves, that the diſeaſe being arrived at its third and laſt ſtage, ſome other ſymptoms and ſymptomatic diſeaſes frequently ariſe, which with the former ones ſwiftly encreaſe, and ſoon and infallibly end in death; if the patient has not the benefit of a proper *regimen*, ripe fruits, or green vegetables. The forms the ſcurvy now aſſumes are divided into five claſſes.

The firſt is, when an *anaſarca* is the moſt prevalent ſymptom, and general in the whole habit. This does not often occur.

In the ſecond ſpecies, the *anaſarca* is almoſt wholly confined to the legs and feet: little elevated puſtles about the bigneſs of a ſmall pin-head at the roots of the hairs if the legs, are moſt conſpicuous in this ſpecies and the third. In the third the legs are ſwelled with a hard and ſenſible tumour, chiefly in the calves, and ſometimes they are greatly indurated without much ſwelling. The muſcles of the thighs are often rigid and painful, and the benders of the legs ſometimes contracted, with one or both knees rigid, and having a hard diſcoloured ſwelling. There are diſcolourings on the ſkin as in the ſecond ſpecies, and tumours, tubercles, bone-achs, hæmorrhages; ſometimes *nodes* and *exoſtoſeſes*,

and other ſymptoms common to all, or moſt of the other ſorts of ſcurvy. It is worſe than the ſecond, but better than the firſt ſpecies.

The fourth ſpecies is diſtinguiſhed by a dry emaciated habit and legs, excruciating bone-achs, frequently moſt violent in the middle and forepart of the *tibiæ*. The author ſaw but a few caſes of this ſort, which moſt commonly afflicts ſeaſoned Europeans and old men. It has a great affinity to a ſpecies of cachexy induced by intermittents in the *Weſt-Indies*. The fifth ſpecies, the moſt malignant and fatal, is commonly preceded by a continued or remitting fever, and ſometimes the ſecond and third ſpecies degenerate into it, eſpecially if ſupervened by any degree or ſpecies of fever. Beſides the uſual ſymptoms of a bloated complexion and œdematous legs, the ſpecks at the roots of the hairs are ſeldom raiſed above the ſkin, the inſide of the mouth is ulcerated, and ſometimes there is a *caries* of the maxillary bones. It is attended ſometimes with a ſlow, continued, remitting or irregular intermitting fever and drought. Its progreſs is ſwift. It is ſometimes formed by a complication of the ſcurvy with the cachexy from an intermittent; and it is generally this ſpecies which ſucceeds fevers at ſea. Two caſes occurred wherein the *diureſis* was much impaired, with thick turbid urine, and ſometimes a ſpurious *iſchuria*; in both the diſeaſe quickly encreaſ-

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ed with profuſe hæmorrhages at times from the noſe. Such hæmorrhages however do not often occur, a cough ſcarce ever, nor any conſiderable *dyſpnææ* in the ſcurvies in the *Weſt-Indies:* nor did the author ever ſee one caſe of luxuriant ſpungy fleſh ariſing from the gums.

Perſons under a manifeſt ſcurvy are not invaded with the bilious fever; yet this fever often attacks them when highly prediſpoſed to the ſcurvy, as alſo when recovering from it, in both caſes proving very fatal.

Chap. 2. *Of the external and internal cauſes of the ſcurvy, &c.*

The prediſpoſing cauſe to this diſeaſe in the *Weſt-Indies* is, according to the author's hypotheſis *(m)*, the intenſe diurnal heat, when the

(m) Extract of a letter from a friend.

SIR,

I had the more curioſity to read Mr. *Biſſet*'s book, as I was preſent in the ſcorbutic conſtitution in *Cumberland* harbour, which he mentions; and as it is fact alone which muſt ſupport theory, and bold aſſertions contradicting common experience require to be well ſupported, I ſend you the following remarks.

It does not appear from my journals, ſome of which you have already peruſed, that a vertical ſun, and an unſeaſoned conſtitution to the *Weſt-Indies*, are the moſt diſtant cauſes of the ſcurvy. I ſhall give you two more inſtances.

The *Tilbury* ſailed from *Spithead June* 18, 1740, and arrived at *Jamaica September* 5, having loſt a great number of men in her paſſage by fevers, without being affected with the ſcurvy in the leaſt that I remember. In *January* following the bilious fever became epidemical, and ſwept off near fifty men in a month's time. Afterwards, though we were off and in the harbour of *Carthagena* from the 5th of *March* to the 10th of *May*, part of which time under a vertical ſun, yet

the ſun is in or near the zenith; joined with a conſtitution not ſeaſoned to the torrid zone. The laxity and conſequent debility of the ſolids from their expanſion by the intenſe heat, neceſſarily encreaſe themſelves and effects by a conſequent weakening of the digeſtive and aſſimilating powers of the body; and thus weakened they become unequal to the denſity and tenacity of the ſea-diet, the occaſional cauſe of the diſeaſe. A ſeaſoning of the conſtitution conſiſts in an increment of the rigi-

we had no ſcorbutic patient on board; nor do I remember that diſeaſe to have been either in the fleet or army, notwithſtanding the want of freſh proviſions. This fleet went to *Cumberland* harbour, but the ſcurvy did not even there become epidemical until the latter end of *Auguſt* or beginning of *September*, and it raged till *December*, during the months in which the ſun is far from being vertical. The *Tilbury*, though at that time ſhe was moſtly kept cruiſing, was as much afflicted with the ſcurvy as any other ſhip. Nay, the *Boyne*, whoſe crew had been near three years in the *Weſt-Indies*, ſhared the ſame fate (if I remember right) with the reſt; or if there was any difference, it was owing to her being the Admiral's ſhip, and being better ſupplied with oranges, *&c.* than others.

The *Greenwich* arrived at *Jamaica* without having had any remarkable ſickneſs on the 16th of *January* 1742. I never heard of her once having the ſcurvy on board until ſhe went to *Ruattan* in the latter end of the year 1743. It proved very epidemical and mortal in the following months of *January* and *February*, together with the fever which Mr. *Biſſet* mentions. I agree with Mr. *Biſſet* that theſe may be an acute ſpecies of the ſcurvy, but his other four diviſions ſeem to be the ſame chronical diſeaſe in different habits or in its different ſtages. I think there is ſome foundation for what he ſays with regard to wine and ſpirits, though no doubt wine is always to be preferred. I do not remember that rice (the common food of *Eaſt-India* ſhips and of the ſick at ſea) was ever found remarkably ſucceſsful in the ſcurvy, or at leaſt not more than oatmeal.

dity

dity of the fibres, or an aſſimilation of them, to thoſe of negroes. He does not think diſtilled ſpirits, as I had obſerved, are productive of the ſcurvy, or have any pernicious influence on the diſeaſe, if properly diluted; and differs from my opinion *(n)*, that ſuch ſpirits check a fermentative tendency which ripe fruits and ſome vegetables have when taken into the ſtomach. He is inclined to believe, that malt-liquor, unleſs it operates as a laxative or diuretic, has no antiſcorbutic, but a contrary quality.

Chap. 3. *Of the prevention of the ſcurvy on board his majeſty's ſhips.*

Chap. 4. *Of the method of curing the ſcurvy particularly at ſea and in deſert places.*

A diſcovery is here ſaid to have been made in the *Weſt-Indies* of a powerful antiſcorbutic quality in rice, which he adviſes as the principal article of diet for the prevention and cure of the ſcurvy at ſea. In the cure he thinks diaphoretics uſeful, but has no favorable opinion of the ſudorific method.

Having before conſtituted five different ſpecies of ſcurvy; in the treatment of the firſt we muſt chiefly regard the dropſy: for the cure of which he furniſhes us with great variety of all ſuch medicines as have been recommended in dropſical caſes, *viz.* fixed and volatile alcaline ſalts, borax, *cantharides*, *millipedæ*, *&c. &c.* He has obſerved good ef-

(n) Vid. p. 253. on the theory.

fects

fects in ſcorbutic ſwellings and *maculæ*, by rubbing with a freſh cut lime, but on the contrary, bad effects from embrocation with oily medicines. Sweet oranges will be beſt for this purpoſe in ſtiff and painful ſwellings, indurations, &c. The ſecond ſpecies requires a greater proportion of attenuants and deobſtruents than the firſt, with ſome demulcent medicines, and a much leſs of purgatives, diuretics, diaphoretics, and corroborants. It is indeed for the moſt part ſoon cured by a proper vegetable diet only. The third ſpecies requires a ſtill greater proportion of attenuants, deobſtruents, and demulcents, together with ſome emollients: conſequently ſweet oranges will be the moſt ſuitable remedy for both external and internal uſe. The cure of the fourth ſpecies is to be attempted by attenuants, demulcents, emolients, ſudorifics, and bathing in warm water; uſing afterwards the cold bath, exerciſe, and other corroborants. In the fifth ſpecies, the beſt internal remedies are juice of limes or lemons, ſhad-docks, pomegranates, caſhew apples, and all ſubacid ſubaſtringent fruits, verjuice, *ſp. vitriol. cort. peruv.* a decoction or extract of the twigs of green *guajac*, lime-water, tar-water, a decoction of ſharp-pointed dock with orange-peel acidulated with *acacia*, and ſweetned with moloſſes, &c. (o). He is of opinion,

(o) It is much to be regretted, that this author, who recommends ſuch a variety of drugs in the ſcurvy, has not favoured

opinion, that *ung. Ægyptiac.* but eſpecially the mineral acids, are hurtful applications to ſcorbutic gums. Sweet oranges are the moſt powerful known antiſcorbutics.

Chap. 5. *Of the ſcurvy chiefly from acid, and aceſcent farinaceous food.*

This chapter is a part of the *Boerhaavian* doctrine contained in *Aphoriſm* 62, 63, *&c. de Morbis ſpantaneis ex acido humore*; and the following ſection *de Glutinoſo ſpontaneo*, as alſo *Aph.* 1166, *&c. de Cachexia (p)*, illuſtrated by caſes which occurred at *Cleveland* in *Yorkſhire*: among which were ſome genuine or manifeſt ſcurvies, as he calls them, which did not however yield in the leaſt to ſuch remedies as are beneficial in the ſcurvy before deſcribed. This *cachexy* ſometimes threatened a dropſy, but more frequently ended in a jaundice. In the beginning, before the diſeaſe was formed into a manifeſt ſcurvy or jaundice, he gave pretty ſmart mercurial phyſic: the warm gums, *&c.* prepared ſteel had particularly a good effect. Aperient corroborative decoctions and a variety of medicines are ſubjoined. Such medicines, after premiſing an emetic, were likewiſe the moſt proper on the commencement of a real jaundice. But when the diſeaſe terminated in a

voured the public with a few practical caſes where the good effects of ſuch medicines, as lime-water and many others recommended, were diſcovered.

(p) *Vid. Boerhaav. Aphoriſm.*

manifeſt

manifeſt ſcurvy without any icteric taint, a moderate bleeding was of uſe in young plethoric patients having no ſwelling of the ancles. If the blood was found to have an inflammatory ſizineſs, the *antiphlogiſtic* method was ſtill purſued; and when the lentor was ſubdued, the acrid antiſcorbutics with emollient greens, ſteel, and ſometimes lime-water, *&c. &c.* were preſcribed.

Chap. 6. *Of ſcorbutic and malignant ulcers.*

Chap. 7. *Of the cure of ſcorbutic ulcers.*

Under theſe titles we have a long diſſertation on different ſpecies of dyſepulotic, chronic, and carious ulcers.

APPEN-

APPENDIX

IT has been no eaſy matter to obtain a knowledge of the many writings on this diſtemper. There have been collections made from time to time, of the ſeveral authors on the plague, venereal diſeaſe, &c.; but no ſuch have been compiled of writers on the ſcurvy. *Sennertus*, *ann.* 1624, when he wrote his own treatiſe, reprinted the writings of *Solomon Albertus* and *Martini*, together with *Ronſſeus*, and the authors which he had publiſhed *ann.* 1583, *viz. Echthius*, *Wierus*, and *Langius*; and this book, containing thoſe ſeven authors, is the only collection ever publiſhed of writers on the ſcurvy. There was here as little aſſiſtance to be obtained from medical *bibliothecæ*. *Lipentus*, in his *Bibliotheca realis medica*, publiſhed *ann.* 1679, reckons up twenty-nine writings on this ſubject, of which eight are academical diſcourſes or diſputations. *Mercklin*, in his *Cynoſura medica*, publiſhed in the year 1686, enumerates twenty-four authors on the ſcurvy. Of theſe, one, *viz. Henricus a Bra*, is claſſed among them (though improperly) upon account of a letter written to *Foreſtus* upon a very different ſubject *(a)*. Another, *viz. Albertus*, he has by miſtake inſerted twice in his liſt; and has

(a) Vid. Foreſti obſerv. medicinal. lib. 20. *obſ.* 12.

given

given a place in it to *Joſ. Stubendorfius* an editor of *Eugalenus*, *Simon Paulli*, *Joh. Langius*, *Arnold. Weickardus*, and *Ludov. Schmid*; which three laſt I have taken notice of in the *Bibliotheca*, though perhaps they are not deſerving of it. He has beſides included in it three academical diſputations. The indefatigable Dr. *Haller* publiſhed *ann.* 1751. in his notes illuſtrating *Boerhaave*'s *Methodus ſtudii medici*, the titles of almoſt all medical writings now extant, no leſs than 30,000 volumes. But it were to be wiſhed, that ſo good a judge had diſtinguiſhed ſuch books as, not being able to maintain their character, are now out of print, or occaſional pamphlets, and ſome trifling academical orations and diſputations, from writings of greater value.

The following liſt contains the titles of ſuch writings on the ſcurvy, as have been omitted in the foregoing ſheets, but are mentioned in thoſe collections; and comprehends all that, after the moſt diligent inquiry, have come to my knowledge; except a few academical diſputations.

J. Roetenbeck und Caſp. Horns beſchreibung des ſcharboks. Nurnberg. 1633.

Chriſtoph. Tinctorius de ſcorbuto Pruſſiæ jam frequenti. Rigiom. 1639.

J. van Beverwyck van de Blaauw ſchuyt. Dordrac 1642.

Henrici

Henrici Botteri (b) tractatus de ſcorbuto. Lubec 1646.

J. Schmids von der peſt Frantzoſen und ſcharbock (c). Augſpurg. 1667.

Phil. Hæchſtetteri (d) obſervationes medicinales raræ. Lip. 1674.

Hen. Cellarius bericht von ſcharbock. Halberſtatt 1675.

Jon. Zipfel vom ſcharbock griesſtein und podagra. Dreſd. 1678.

Maitland on the ſcurvy.

Melchioris Friccii diſſertatio de colica ſcorbutica. Ulm 1696.

J. Hummel de arthritide tam tartarea quàm ſcorbutica (e). Buding 1738.

Pierre Briſcow traité du ſcorbut (f). Paris 1743.

Cadet diſſertation ſur le ſcorbut, avec des obſervations (f). Paris 1749.

As to theſe or other books which I have not ſeen, or any curious and uſeful obſervations made or publiſhed on the ſcurvy, or alſo ſuch of the following academical performances as are diſtinguiſhed by an aſteric, I deſire and

(b) Profeſſor at *Cologne*. I have not ſeen this treatiſe; nor did *Haller*. I never found it ſo much as quoted by any author, though it underwent two editions.

(c) I have ſeen the book; it contains nothing remarkable.

(d) A phyſician at *Augſburg*. *Decad.* 7. *caſ.* 10. contains ſome good obſervations on the ſcurvy.

(e) An indifferent character of it is given by *Haller*.

(f) Theſe two *French* authors are now out of print, as would ſeem at *Paris*. I imagine the latter to have been an academical performance.

earneſtly

earneſtly entreat all men of ſtudy and learning who are poſſeſſed of them not to conceal them from me, or what is of more conſequence, from the republic of phyſic and letters, but that they would be pleaſed to favour me with an abſtract or analyſis of ſuch books or obſervations, which will be thankfully acknowledged. If the intended letter exceed too much the uſual ſize of an epiſtle by poſt, in this caſe, upon giving me notice, I ſhall direct a leſs expenſive method of having it tranſmitted.

Academical performances.

Jacob. Albini diſputato de ſcorbuto (g). Baſil. 1620.

Abrahami Dreyeri diſputatio de ſcorbuto (g). Baſil. 1622.

Amb. Rhodi diſputatio de ſcorbuto. Haffn. 1635.

Jac. Haberſtro diſp. inaug. de ſcorbuto. Jen. 1644.

Herm. Conringii diſp. Reſp. Behrens. Helmſ. 1659.

Geo. Franci diſp. Reſp. Wyck. Heidelb. 1670.

And. Birch Angli diſp. inaug. de ſcorbuto. Lugd. Bat. 1674.

Olai Borrichii diſp. Reſp. Joh. Melch. Sulzero. Haffn. 1675.

Caroli Patini (h) oratio de ſcorbuto. Patav. 1679.

(g) Both are preſerved in a collection of academical diſputations, publiſhed by the bookſellor *Genathius*.

(h) Profeſſor at *Padua*; more celebrated for his other writings than this.

* *Sam.*

* *Sam. Koeleſer de Kereſeer de ſcorbuto Mediterraneo.* Cibinii 1707.

Jacob Crauford diſp. inaug. de ſcorbuto. Lugd. Bat. 1707.

* *G. Thieſen de morbo marino.* Lugd. Bat. 1727.

* *Michaelis Alberti (i) diſp. de ſcorbuto Daniæ non endemio.* Hall. 1731.

* *Chriſtoph. Mart. Burchard diſp. de ſcorbuto maris Balthici accolis non endemio.* Roſtoch. 1735.

* *Sim. Pauli Hilſcher (k) programma de ſcelotyrbe memorabili caſu illuſtrata.* Jen. 1747.

Mich. Law diſſert. medic. inaug. de ſcorbuto. Edin. 1748.

Quæſtio medica. An à diverſâ virûs ſcorbutici indole et ſede morbi diverſi? auctore Henric. Michael. Miſſa medicinæ Baccalaureo. Paris 1754.

(i) Preſent profeſſor of medicine at *Hall* in *Saxony*.
(k) Preſent profeſſor at *Jena*.

A CHRONOLOGICAL INDEX

of medical authors who have written particular books on the ſcurvy; as alſo the principal ſyſtematic, and other medical writers, whoſe ſentiments are delivered in this treatiſe.

1534. *Euritius Cordus*, a celebrated Botaniſt. He died *ann.* 1538.

1539. *Jo. Agricola (Ammon)* Profeſſor of Medicine, *&c.* at Ingolſtadt.

1541. *Jo. Echthius*, a phyſician at Cologn, by birth a Dutchman. He died *ann.* 1554.

1560. *Jo. Langius*, chief phyſician to the Elector Palatine.

1564. *Balduin. Ronſſeus*, ordinary phyſician to the city of Goude in Holland.

1567. *Jo. Wierus*, chief phyſician to the Duke of Cleves and Juliers.

Adrian. Junius, an eminent phyſician and hiſtorian. He died *ann.* 1575.

1581. *Rembert. Dodonæus*, chief phyſician to the emperor of Germany.

1589. *Hen. Brucæus*, Profeſſor at Roſtock.

Balthaſ. Brunerus, chief phyſician to the Prince of Anhalt.

1593. *Solomon Albertus*, Profeſſor of Medicine at Wittenburg.

1595. *Petrus Foreſtus*, phyſician at Alcmaer, Profeſſor at Leyden, *&c. (a).*

1600.

(a) Beſides the above authors, it is taken notice of by ſeveral other medical writers in the ſixteenth century, *viz. Cornelius Gemma, (Coſmocritic. lib. 2. cap. 2.) Petrus Pena, (adverſar.*

1600. *Hieronymus Reuſnerus*, phyſician to the city of Norlingen.

1604. *Severinus Eugalenus*, a phyſician of Dockum in Frieſland.

1608. *Felix Platerus*, Profeſſor of Medicine at Baſil in Switzerland.

1609. *Gregorius Horſtius*, chief phyſician to the Landgrave of Heſſe, Profeſſor at Gieſſen.

Mat. Martini, phyſician at Eiſleben.

1624. *Daniel Sennertus*, Profeſſor of Medicine at Wittenburg, and chief phyſician to the Elector of Saxony.

1626. *Arnold. Wickardus*, a phyſician at Francfort.

1627. *Frederic Vander Mye*, phyſician to the garriſon in Breda.

1627. *Ludov. Schmid*, chief phyſician to the Marquis of Baden, *&c.*

1627. *Gul. Fabric. Hildanus*, phyſician and ſurgeon to the Marquis of Baden, *&c.*

1633. *Jo. Hartmannus*, Profeſſor at Marpurg.

(adverſar. ſtirpium, p. 121. *&* 122.*) Schenckius (obſervat. medicinal.) Carrichterus, (prax. Germanic. lib.* 1. *cap.* 41.*) Mithobius de peſte, Tabernæmon de thermis, Peucerus de morbis contagioſis, &c.* There were likewiſe two *theſes*, or diſputations, publiſhed upon it; one by *Tweſtrengk*, at *Baſil*, in the year 1581, and another by *Hambergerus*, at *Tubingen*, in the year 1586. One *Gul. Lemnius*, a *Zealander*, is ſaid to have wrote upon the ſcurvy. He ſeems to have been a very trifling author, believing it to be the ſame diſeaſe in man that the meaſly diſtemper is in hogs. It would appear from *Solomon Albertus*, that his performance was out of print in the year 1593.

1640. *Lazar. Riverus*, the celebrated Montpelier Profeſſor.

1645. The faculty of phyſic at Copenhagen *(b)*.

1647. *Joh. Drawitzs*, phyſician at Leipſic, a celebrated chemiſt.

1657. *Joh. Rudolph. Glauberus*, a celebrated chemiſt of Amſterdam.

1662. *Balth. Timæus*, chief phyſician to the Elector of Brandenburg.

1663. *Valent. Andreas Moellenbrochius*, a phyſician of Erfurt.

1667. *Thomas Willis*, an Engliſh phyſician, Seidleian Profeſſor at Oxford.

1668. *Everard Maynwaringe*, a phyſician at London.

1669. *Paul. Barbette*, a Dutch phyſician.

1669. *Frederic. Deckers*, Profeſſor at Leyden.

1672. *Gualterus Charleton*, phyſician in ordinary to his Majeſty King Charles II.

1672. *Herman. Nicolai*, a Dane.

1674. *Franciſcus Deleboe Sylvius*, Profeſſor at Leyden.

1675. *Gideon Harvey*, phyſician in ordinary to his Majeſty King Charles II.

1676. *Bernard Below*, phyſician to the King of Sweden.

(b) It was one of the moſt celebrated faculties of medicine at that time in *Europe*; of which *Olaus Wormius*, two of the *Bartholines*, and *Simon Paulli* were then members. The latter, who was phyſician to the King of *Denmark*, has uſually been ranked among the writers on the ſcurvy, upon account of an appendix which he added, *ann.* 1660, to his *Diſcourſe de vera cauſa febrium*, &c.

1681.

1681. *Abraham. Muntingius*, Profeſſor of Botany in Groningen.
Dellon, a French phyſician.
1683. *L. Chameau*, a French phyſician.
1684. *Stephanus Blancardus*, a Dutch phyſician.
1684. *Jo. Dolæus*, chief phyſician, *&c.* to the Langrave of Heſſe-Caſſel.
1685. *Michael Ettmullerus*, public Profeſſor in the univerſity of Leipſic.
Thomas Sydenham, the Engliſh Hippocrates.
1694. *Martin. Liſter*, an Engliſh phyſician.
1696. *William Cockburn*, phyſician to the Royal navy of G. Britain.
1699. *Franc. Poupart*, phyſician at Paris.
Arch. Pitcairn, an eminent Scots phyſician.
1708. *Herman. Boerhaave*, the celebrated Leyden Profeſſor.
1712. *Jo. Hen. de Heucher*, Profeſſor at Wittenburg.
1720. College of phyſicians at Vienna.
1734. *Jo. Freder. Bachſtrom*, a Dutch phyſician.
1734. *Damianus Sinopeus*, chief phyſician to the marine hoſpital at Cronſtadt.
1737. *J. G. H. Kramer*, phyſician to the Imperial army in Hungary.
1739. *Frederic. Hoffmannus*, a celebrated author, Firſt Profeſſor of Medicine at Hall in Saxony, *&c.*

1747. *Abraham Nitzſch*, phyſician to the Ruſſian army.

1747. Dr. *Jo. Geo. Gmelin*, Profeſſor of chemiſtry and natural hiſtory, ſuppoſed at Tubingen.

1749. The learned Dr. *Richard Mead*, late phyſician to his preſent Britannic Majeſty, *&c.*

1750. Dr. *Richard Ruſſel*, phyſician at Lewes in Suſſex.

1750. Dr. *John Huxham*, a celebrated phyſician at Plymouth.

1752. Dr. *John Pringle*, Phyſician-General to the Britiſh army.

1752. Dr. *Charles Alſton*, learned Profeſſor of Botany and Medicine at Edinburgh.

1753. Dr. *Anthony Addington*, phyſician at Reading.

1753. *Gerard Van Swieten*, Firſt phyſician to the Emperor and Empreſs of Germany, *&c.*

1755. *Charles Biſſet*, ſurgeon at Cleveland in Yorkſhire.

An

An Alphabetical Index of Authors, &c.

Thoſe who do not treat of the ſcurvy, are marked in Italic *characters.*

Authors are ſometimes quoted in this treatiſe, without inſerting the title of the book. In ſuch caſes, the pages in which the titles are mentioned, are here diſtinguiſhed by being put within crotchets.

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